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Links between Entrepreneurial Orientation and Corporate Governance Structures in the South African Oil and Gas Industry

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A research report submitted to the faculty of Commerce, Law and Management, University of the Witwatersrand, in partial fulfilment of the requirement for the degree of Master of Management in the field of Entrepreneurship and New Venture Creation

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ABSTRACT

This study examines the relationships between entrepreneurial orientation (EO) and four sub-dimensions of corporate governance structures (CGS) in a sample of 173 senior decision-makers representing companies in the South African oil and gas industry. The four attributes of CGS include: board effectiveness and competence, board knowledge and experience, board commitment and recognition of complexities and board involvement in decision-making processes.

A series of Canonical correlation analyses assess the strength of relationships between the dimensions of EO and CGS at both univariate and multivariate levels.

The results of this study support a positive significant relationship between EO dimensions namely, innovation, proactiveness and risk-taking; and the dimensions of CGS namely, board effectiveness and competence, board knowledge and experience, board commitment and recognition of complexities, and board involvement in decision-making processes. It also indicates a positive link between EO and CGS.

The synthesis gleaned from this study is based on the expansive literature review on EO and CGS which provided an insight on the existing knowledge on the relevance of EO in organisational growth and CGS with respect to the nature of the boards, executives and decision-makers roles and responsibilities in strategic entrepreneurial activities within the organisation. This study is of practical use to organisations, enabling them to think and act entrepreneurially, and to policy makers to assist them to keep track of the regulatory guidelines, adopted by boards and executives in monitoring and implementing entrepreneurial culture in their respective organisations. Finally, to researchers and academics, this study allows an extension of knowledge to the EO and CGS and its applicability in one distinct industrial context.

DECLARATION

I, Mr Vincent Brown Molokwu, declare that this research report is my own work except as indicated in the references and acknowledgements. It is submitted in partial fulfilment of the requirements for the degree of Master of Management in the field of Entrepreneurship and New Venture Creation in the University of Witwatersrand, Johannesburg. It has not been submitted before for any degree or examination in this or any other University.

_____
Vincent Brown Molokwu

Signed at.....

On the..... day of 2011

DEDICATION

In memory of my father Emmanuel O. Molokwu, for his entrepreneurial spirit, and for Uche, Chekwu, Ozioma, Paris-Brown and my loving wife Lisa for your perseverance.

ACKNOWLEDGEMENTS

I reverence the Almighty God through Jesus the son for the strength He had allowed to draw towards making this journey a blessing. With Him all things are made possible.

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To my mother, thank you for your waiting and prayers God will always reward you for being such a wonderful mother.

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> "And I tell you, if you have the desire for knowledge and the power to give it physical expression, go out and explore. If you are a brave man you will do nothing: if you are fearful you may do much, for none but cowards have need to prove their bravery. Some will tell you that you are mad, and nearly all will say: What is the use? For we are a nation of shopkeepers and no shopkeeper will look at research which does not promise him financial return within a year. And so you will sledge nearly alone, but those with whom you sledge will not be shopkeepers: that is worth a good deal."
>
> The Worst Journey in the World,
> Apsley Cherry-Garrard, (1992).

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1 INTRODUCTION

The relationship between entrepreneurial orientation (EO); and corporate governance structures (CGS) have long puzzled researchers, for example, Fiegnener (2005) and Beaver, Davies and Joyce (2007), point out that research on CGS and corporate entrepreneurship orientation have been focused on agency problems, ownership structure, board composition and shareholders' interest. There is however, little empirical evidence found to support the idea that governance structures relate to EO. Naldi, Nordqvist, Sjöberg and Wiklund (2007) and Filatotchev and Nakajima (2010) point out that insufficient attention has been paid to the role of the board and decision makers in the organisations in which these entrepreneurial activities take place.

Organisations are reorienting towards structures that will position them to continuously innovate in the face of technological and innovative challenges, and to manage uncertainty. The corporate governance systems have been observed as one of the greatest structures and mechanisms that regulate the relationships between executives and shareholders (Zahra, 1996). At the same time these systems have the ability to shape managers commitment to EO through strong boards and involvement from executives in monitoring and managing the decision controls that support entrepreneurial initiatives. Thyil and Young (2010), observed a need for perspective and a model of governance, particularly one that recognises and relates to EO, as an important part of the organisation's internal and external systems that will bring about a competitive advantage for growth and sustainability in the organisation.

The South African oil and gas industry has gone, and is still going, through a series of transformations from the industry that served the apartheid era of secrecy and boycotts to one more in line with the democratic and economic needs of South Africa (Miller and Meelis, 2005). The current decade has produced a wave of activity in the industry to initiate and invigorate rigorous innovative thinking through EO (Adams, 2009). The South African Global Entrepreneurship Monitor (GEM) report (Herrington, Kew, and Kew 2009) outlined how the economy is being driven by entrepreneurial

oriented organisations; how industries are experiencing improvements in a variety of sophistication that can only be achieved through creative thinking and increasing R&D of high technology change.

Corporate governance in South Africa has transformed over time and is recognised as being necessary to the success and revitalisation of the country's entrepreneurial activities, economic growth and sustainability (Malherbe and Segal 2001) through the enforcement of stringent regulations. Consequently, the need to focus on the qualities of governing boards and executives' capabilities.- information provision, transparency, transformation, monitoring, reporting, effectiveness, commitment, knowledge, expertise and involvement in strategic decision-making processes and controls that move the organisation forward entrepreneurially - is pivotal (Malherbe and Segal 2001).

Entrepreneurial projects are sometimes very risky and ever increasing failure rates are recorded while many creative initiatives and novel ideas never become successful even when tried and tested (Crawford 1987; Gabrielsson 2007). On the other hand, organisations acting proactively to take advantage of an industry 'first mover' seem to ignore the possibility of the competitors adopting a pre-emption strategy or displaying reactiveness in order to maintain their market share (Henderson and Cool 2003).

One of the greatest challenges faced by organisations in today's growing volatile business environment is the ability to remain competitive and ahead of their rivals. This can be done through the board and executives' support and appetite for entrepreneurial activities. Business researchers and scholars have documented that organisations can address these challenges by scrutinising their governance systems and ensuring an alignment with their vision, mission, strategies, objectives and goals through an effective and well-structured board, along with executives that can direct, monitor and support initiatives. Thus organisations will be better suited to explore and exploit internal and external venturing opportunities thus enhancing the long-term competitive position of the organisation to achieve sustainable growth (Gabrielsson 2007).

1.1 Context of the study

1.1.1 South Africa oil and gas industry overview

South Africa is the leading economic backbone as well as a key player in the African oil and gas industry (Mbendi 2008). The history of the oil industry in South Africa dates back to 1884, a period when the first oil company was established in Cape Town to import refined products. Oil and gas are components of modern industrialised civilisations, and as the societies and economies grow, so do their oil and gas industries (Miller and Meelis 2005), The oil and gas industry constitutes building blocks at every stage of production and consumption in key sectors of economic life such as petrochemicals, chemicals, agriculture, construction, manufacturing and services industries. Human lives have been revolutionised through this industry's tremendous growth, with the promise of economic sustainability at maturity (Mbendi 2008).

The industry is highly capitalised and regulated therefore, for economic development and sustainability to flourish, a stable supply of oil and gas is needed. To achieve this, organisations have to adapt to technological and innovative changes and embark on capacity building to enable supply stability, (Hung and Mondejar 2005). Oil and gas is an industry where organisations often have to make capacity additions, innovate regularly due to rapid technological advancement and the emergence of alternate products (Henderson and Cool, 2003) as well as the timing and decision controls that will position the organisation to take advantage of its environment. Much of the manual operations over the years have been replaced by automation, but operations still rely on human input (Miller and Meelis 2005). Therefore, a sound relationship between EO and CGS is crucial to stable production and supply of oil and gas through entrepreneurial initiatives in the established and emerging organisations. Larger economies of scale could be achieved by investing in capacity building to meet increasing market demand, new technologies and management styles (Henderson and Cool 2003).

The South African oil and gas industry has gone and is still going through the series of transformations from the industry that served the apartheid era of secrecy and boycotts to a model more in line with the democratic and economic needs of South Africa. The current decade has produced a wave of activities in the industry to initiate and invigorate rigorous innovative thinking through EO (SAPIA 2009; Adams 2009). The industry, a vital component of the South Africa economy, operates within a highly regulated environment. In terms of access and security of oil and gas supply, the industry needs predictable regulations in conjunction with better margins and sustained investment returns.

The development of infrastructure is another challenge facing the industry. One way to address these challenges would be to upgrade its entrepreneurial innovative ability. This can be achieved by looking at the entrepreneurial human capital within the respective organisations in the industry. Furthermore the industry needs to become more proactive in the face of challenges while simultaneously intensifying global competition (Urban and Oosthuizen 2009); fast tracking adaptation to technological changes in line with international standard while continuously paying attention to environmental issues. In an emerging economy such as South Africa, one of the primary goals of the organisation is growth and this can be achieved by organisations that continuously innovate in the face of challenges (Urban 2010).

The oil and gas industry still follows their bureaucratic management procedures in terms of adapting to change and individual team EO. With very limited crude reserves, there is a focus on refined products such as petrol, fuel oil, diesel, paraffin, jet fuel and LPG produced with the following method: crude oil refining; coal to liquid fuels, gas to liquid fuels; and natural gas to liquid fuel (SAPIA 2009). The industry contributes about two per cent of South African's GDP, effectively enhancing the energy supply efficiency and stability with an average of 18 per cent of national supply, manufacturing over 90 per cent of the country's petroleum products (SAPIA 2009). The industry contributes to economic development through redistribution of income by committing to corporate social investment, payment of taxes and most importantly, supporting employment for more than 100 000 people (SAPIA 2009).

1.1.2 Corporate governance in South Africa

In South Africa, the issues surrounding corporate governance have changed over time from focusing mainly on ethical issues (Malherbe and Segal 2001; Arjoon 2005; West 2006) to transformational issues, recognised as vital to the success and revitalisation of the country's entrepreneurial activities. It is known that by the late 1980s, many of South Africa's corporations were disorganised, unfocused, without monitored governance structures and run by entrenched and complacent managers (Malherbe and Segal 2001; West 2006).

According to Abidin, Kama, and Jusoff (2009), corporate practices in South Africa fell behind international norms, as did laws and regulations. Enterprise development was hindered and there were no prospects for organisations' internationalisation or competing in a global environment which adversely affected EO within established companies (Malherbe and Segal 2001). South Africa re-entered the global economy in the mid-1990s and by 2001, little of that comfortable, self-accomplished political, economic and entrepreneurial activity embedded in pre-1994 remains (Malherbe and Segal 2001; West 2006; Esser and Dekker 2008). CGS have changed irrevocably - a decade ago, conglomerates had been unbundled and elaborate control structures dismantled, at the same time legislation, regulations, listing rules and accounting standards were converging to international norms. The rapid changes were explained by the development path chosen by South Africa since becoming a democracy (Malherbe and Segal 2001).The quest for social and political transformation brought about legislature change in the 1990s and in 1992, a committee of corporate governance was formed (Mans 2011).

In 1994 the King Report on Corporate Governance (King I) was published by the King Committee on Corporate Governance, incorporating a Code of Corporate Practices and Conduct, aimed at promoting the highest standards of corporate governance in South Africa, (IOD 2002; Dekker 2002; Mans 2011). However, it became imperative to recreate King I as a result of evolving global economic environment in conjunction with legislative development.

On the basis of this transformation, it is recommended that South African companies have a unitary board structure with a composition of executive and non-executive directors, preferably with a majority of non-executive directors, (Dekker 2002; West 2006) of whom a sufficient number should be independent of management in order to ensure the protection of minority shareholders' interests in order to achieve a balance between conformance with governance principles and firm performance in an entrepreneurial market economy. Dekker (2002) argues that while it is of the utmost importance that companies operate from a base of integrity, there is need that the focus must be on a participative entrepreneurial approach rather than a dominant one.

The King II Report on Corporate Governance (King II), refers to CGS as

> "institutional activism within an organisation and the emphasis on the sustainability…of its' performance, boards and executives' involvement in decision controls in applying the test of fairness,… transparency to all acts or omissions and be accountable to the organisation and stakeholders" (Dekker, 2002:2).

This governance code (IOD 2002) was based on 'comply-or-explain' regulation to enforce the transitional system of both take-over processes and decongestion of ownership concentration on a few minorities. The King II report focused more on listed companies, director's roles and responsibilities, auditing and financial reporting; and internal and external governance systems. All of these shape organisations sustainability, incorporating the need for the recognition of stakeholder's interest, socio-economic, and environmental issues (West 2006; Esser and Dekker 2008).

The risk present in the oil and gas industry in post-apartheid South Africa is both internal and external. For example, Dekker (2002) states in his analytical paper on King II, that organisations have to 'comply and if not, explain' with matters relating to boards transparency on take-overs, executives' responsibilities in setting out controls, and strategic decision-making processes that will attract foreign investments and position organisations to be economically sustainable.

According to Malherbe and Segal (2001), and Rossouw, Van der Watt, and Malan (2002), the code of corporate governance as established by King II, focused attention on the need for proper board composition, information provision, monitoring and participation in decision-making, ensuring that control over the company are executed by management, board and directors. The report rigorously expanded on the appointment, role and functioning of executive and non-executive directors of the board, and in particular the board's commitment to and effectiveness in management controls. To enhance this effectiveness, a certain degree of knowledge and expertise is needed to facilitate smooth implementation of strategies. For example, prior to listing; companies will be required to submit a declaration by each director, which is designed to evaluate the qualifications, experience and integrity of the directors.

South Africa has adopted a more Anglo-centric governance system that suggests a more inclusive approach on the revised King I (Dekker 2002), allowing corporate organisations to formulate its strategies, operations and include the stakeholders in consideration of the environment. This is in contrast to the South African Company law that institutes fiduciary duties of directors (West 2006; Esser and Dekker 2008; Mans 2011). However, researchers and academics have identified that South Africa, as a recovering, emerging and transitional economy, has in several ways been unsuccessful in formulating and implementing stringent governance systems that will enhance speedy transformation, in an attempt to encourage corporate entrepreneurial activities and at the same time, attract international investment (Rossouw *et al.,* 2002; West 2006). According to Malherbe and Segal (2001); Rossouw *et al.,* (2002); West (2006); and Esser and Dekker (2008), there has been slow progress in the areas of executive and non-executive directors independence, disclosure, transparency and agency problems. CEOs, the board and the executives, were criticised by foreign institutional investors, on their return to South Africa post-1994, because the CGS were characterized by extensive board and executive compensation.

This poses a question on how a truly South African corporate environment should develop to encourage entrepreneurial initiatives. This should be done through the board's involvement in management controls, thus strengthening and influencing management support, and or disposition to corporate entrepreneurial venturing.

Consequently, the need to focus on the qualities of governing boards' and executives' capabilities, the evaluation of boards and executives professional expertise and qualifications, the experiences and integrity of the directors (Rossouw *et al.,* 2002); information provision, transparency, transformation, monitoring, reporting, knowledge and competence (West 2006; and Esser and Dekker 2008); as well as the extent of board and executive participation in management controls, in organisations where corporate entrepreneurial activities take place, is pivotal (Naldi *et al.,* 2007; Filatotchev and Nakajima 2010). The government regulatory agencies, the accountants' profession and the stock exchange and market elements, have also been forces for change, motivated largely by the desire to apply international standards in South Africa (Malherbe and Segal 2001).

Similarly, the change of global governance code, for example, USA Sarbanes-Oxley Act based on 'comply or else' principles, enforcing all companies to comply with no exceptional provision**.** United Nations introduction of a new governance code based on 'adopt or explain' compliance in relation to organisations responsiveness to the environment in which they operate, and the amendment of 1973 Companies Act, to a new Companies Act effective in 2010, which states that boards and executives who act with gross negligence, wilful misconduct, without knowledge and expertise, lack experience and integrity and breach the trust are not exempted from liability (SAICA 2009; IOD 2009). In consideration of all these concerns, the need to revise King II in line with international standards and the amended Companies Act was implemented. The King III Report on Corporate Governance (King III) was published in 2009 based on 'apply or explain' characteristics as contained in the new Companies Act, Number 71 of 2008.

The key principles of King III focus on leadership, sustainability and corporate citizenship, which became effective in March 2010 (SAICA 2009; IOD 2009). With respect to the role and function of the board King III placed great emphasis on integrative governance systems. The following guidelines, as pointed out in King III (SAICA 2009; IOD 2009), are of great value to this paper:

- ***Board effectiveness and competence***
  - The board should be the centrality by which organisations are governed, directed and controlled.
  - The board should be responsible for analysing and evaluating business processes and venturing.
  - The board should engage in assessing, setting and approving clear, short and long-term organisational goals.
  - The board should ensure the effectiveness of the organisation's system of internal and external controls, performance and management.
  - The board should ensure that effective communication be maintained across all levels.
  - The governing board members should be suitably skilled and competent enough to initiate where the organisation should be headed in future technological, product-market or administrative innovation.
  - The board should exercise leadership, enterprise, integrity and fair decisions.

- ***Board professional knowledge and experience***
  - The board should appoint and plan training of new executives.
  - The board should have the knowledge and expertise needed to take advantage of sustainable opportunities that will eliminate or minimize risky venturing, unforeseen technological adverse effects on the environment and community in which they operate.
  - The board should be experienced in developing long-term planning that will result in sustainable outcome and add value to the organisation.
  - Professional knowledge to draw strategy in accordance with the purpose of the company.
  - The performances of board and executives should be evaluated annually
  - Each director and executive should be knowledgeable and have the experience to exercise a degree of care, skill and diligence and in good faith to the interest of the organisation in the process of strategic decision processes that supports management business activities.

- The board and its executives should periodically sets aside time to learn more about issues (internal and external) relating to the industry and the organisation they represent.

- ***Board commitment and recognition of complexities***
  - The board and its directors should participate in strategy development rather than adopting from management team.
  - The board should ensure consistency in the organisations ability to meet future needs through internal/external venturing and business practices which are sustainable.
  - The board should ensure that effective communication be maintained across all levels.
  - The board should ensure that risk management is inseparable from the organisation's strategic business procedure.
  - The board should ensure that risk management processes are implemented and aligned to the organisation's risk chosen philosophy and that risk management be practiced by all employees in their daily creative activities.
  - The board should be proactive and transparent in reporting and at the same time, be attuned to the concerns of a variety of stakeholders.
  - The board should seek and share information related to industrial trends, through honest and open engagement based on trust.

- ***Board involvement in decision controls***
  - The board should be responsible for monitoring strategy, risk, performance and sustainability.
  - The board should consider sustainability in their decision roles as opportunity existence and should optimize this opportunity by creating value.
  - The board should be responsible for the process of risk management.
  - The board should act in the best interest of the organisation through their involvement in strategic decisions that create value.

- The board should be involved in determining, reviewing and ratifying internal and external venturing proposals that are initiated by management.
- The board should be responsible and involved in determining and enforcing changes in the organisation's policies, vision and mission thus guiding their ability to sustain long-term growth.

In the same manner, King III (IOD 2009) has extended the duties of boards and executives to be directly involved in strategic decision-making, risk-taking management, monitoring and controls. The board and executives are obliged to comply with the appliance of legislative, environmental, energy, labour, national occupational health and safety guidelines in their respective organisations within the industry (Miller and Meelis 2005). Supporting Dekker's (2002) argument that while it is of the utmost importance that companies operate from a base of integrity, in relation to good governance and best corporate practices, there is need that the focus must be on a director's participative entrepreneurial approach rather than a dominant one.

1.2 Problem statement

According to the South African Petroleum Industry Association (SAPIA), one of the fundamental challenges facing the oil industry is the skill transformation process within the corporate ladder, proactiveness in the face of change through entrepreneurial creative activities and preferences for risk-taking and development of new initiatives within the organisation. It is known that the three major characteristics of EO are innovation, risk-taking and being proactive in product and service development. In this view, it is imperative to note that in every organisation, there is an element of EO and within the most bureaucratic organisations there exists some element of highly entrepreneurial people (Morris, Kuratko and Covin 2008).

The problem therefore becomes one of determining the relationship between these elements of EO and the characteristic of CGS that drives the support or disposition of entrepreneurial activities within the South African oil and gas industry.

According to Morris *et al.,* (2008), innovation is about the unknown and corporate boards and executives are about setting controls and monitoring implementation of strategic goals. The ability of organisations to instil EO and the board's involvement in the processes of entrepreneurial activities will reflect in the organisations earning potential and sustainability. Beaver *et al.,* (2007), conceptualised boards' and executives' effectiveness, commitment and involvement in the EO decision making processes, explaining that the meaning of effective involvement often varies across studies. Firstly this shows that there has been a missing point of conceptualisation of boards' and directors' effectiveness, knowledge, commitment and involvement in EO, secondly showing that corporate boards' and executives' research has been based on the agency theory without paying attention to how governance structures impact EO within the organisation.

There have been weaknesses of research in corporate entrepreneurship when it comes to the issues of CGS and EO. Literature from most studies has shown that corporate governance and EO are focused on issues relating to board and executive' demographics, ownership structure, board size, board composition and organisation performance without actually assessing the prevailing relationship or linkages between the attributes of EO and corporate governance mechanisms. Fiegnener (2005) pointed out that good corporate governance systems can promote the process of EO in the organisation through the evaluation of boards, executives and senior decision-makers in the monitoring and performance of high-level reviews of strategies for entrepreneurial activities.

It is quite clear that EO is present in the South African oil and gas industry however; the critical question this research seeks to address is whether or not there are any relationships or links between the three main attributes of EO and corporate governance systems within the South African oil and gas industry? This question takes cognisance of the regulated and highly capitalised industry which is constantly facing challenges, and the possibility of boards, executives' and decision-makers conflict of interest and acting with impunity.

1.3 Purpose of the study

The perception that boards, executives and senior decision-makers have when reporting their functionalities, suggests that they are involved in various governance roles (Fiegener 2005) through decision 'control activities' which is more than overseeing management performance (Adams 2009). Similarly, Hung and Mondejar (2005) emphasized that boards and corporate leaders are perceived to be directly involved in supporting, championing and sponsoring major entrepreneurial innovative activities at the corporate level. Little has been researched in the South African oil and gas industry about the relationships between entrepreneurship and CGS in promoting EO even when boards and executives are recognised in their roles with strategic entrepreneurial decision control activities such as risk-taking, introduction of new products and services through creative initiatives, and innovative processes in the organisation.

It has been empirically reported that to completely analyse EO, there should be a consideration of all the components and important attributes involved. In view of this, researchers have investigated the individual and organisational features that bring about EO. Examples of these qualities as observed by Morris *et al.,* (2008), are energy shared, enthusiasm traits, organisational cultures, work environment and climate, managerial attitude, directors incentive to innovate (good reward systems), good time management, sponsorship within the organisation, departmental open ownership and financial credibility.

The purpose of this study is to establish the relationship between EO and CGS is fourfold:

- Understand the level of board effectiveness and competence that shapes firms' strategic entrepreneurial direction.
- Establish the presence of professional knowledge and experience within the governing board enabling them to make innovative and risk taking decisions that influence EO within the organisation.
- Establish whether there is a relationship between independent variables such as board effectiveness, board knowledge and experience, board

commitment, board involvement in decision control, and the level of EO in the organisation.

- Determine whether corporate governance mechanisms; such as board involvement in entrepreneurial decision control, board effectiveness and commitment; varies between the attributes of EO in the organisation.

Based on the theoretical construct, an EO model will be formulated with three major attributes, risk taking, proactiveness, and innovativeness. The issues relating to CGS will be represented in terms of board effectiveness and competence, board knowledge and experience, board commitment and recognition of complexities and board involvement in decision-making processes.

1.4 Research need and significance

Prior studies on governance structure and corporate entrepreneurship has observed a need for perspective and model of governance, particularly one that recognises and relates to EO as an important part of the organisation's internal and external systems (Thyil and Young 2010).

Oil and gas is an industry where organisations often have to make capacity additions, innovate regularly due to rapid change in technological advancement and the emergence of alternate products (Henderson and Cool 2003), as well as make timeous decision controls that will position the organisation to take advantage of the environment.

The literature investigation on corporate entrepreneurship in South Africa showed that there is limited research with empirical evidence that has been conducted to investigate the relationships between EO and CGS in the oil and gas industry. The need to explore past literature that will assist in answering the critical question that this study seeks to address is apparent.

A gap exists in the current literature on EO and CGS as pointed out by (Naldi *et al* 2007). Not enough attention has been paid to how boards, executives and decision

makers roles and responsibilities, as outlined in King III (SAICA 2009; IOD 2009), relates to entrepreneurial activities. Organisations differ in terms of their size and governance structures as well as their entrepreneurial creative initiatives, which may be higher in some organizational contexts than in others within the same industry, (Naldi *et al.,* 2007) thus this research will contribute to corporate entrepreneurship literature.

Based on the theoretical conceptual framework and perspective, this study would be of interest to academics, organisations' decision makers, regulatory practitioners and corporate entrepreneurial ventures, in light of the current focus on board executives and senior decision-makers.

In view of this, the present study makes two important contributions. Firstly, it provides extended knowledge of the three main attributes of EO with regard to its applicability in one distinct industrial context, the oil and gas industry. Secondly, it sheds light on the influence that the corporate governance dimensions have on organisations' EO, thereby advancing the knowledge of corporate entrepreneurship in this capitalized and highly regulated type of industry.

1.5 Definition of terms

1.5.1 EO

According to Olivier and Veronique (2009), scholars and researchers in the field of entrepreneurship have used the term EO to describe a "fairly consistent set of related activities or processes" for example, Lumpkin and Dess (1996), stated that EO refers to the processes, practices, and decision-making activities that lead to new entry, and innovative products or services that can differentiate an organisation from others in the market.

In other words, EO as a set of personal psychological traits, values, attributes, and attitudes is strongly associated with a motivation to engage in entrepreneurial

activities (Dunkelberg and Cooper 1982). An entrepreneurial oriented organisation as:

> "One that is engaged in product-market innovation, undertaking somewhat risky ventures, and is first with proactive innovations, beating competitors to the punch" (Miller 1983:771)

Covin and Slevin (1991), expanded on Miller's entrepreneurship construct linking it to a conceptual model of organisations' entrepreneurial behaviour, describing it as a process of product innovation and technological leadership that forms the basis of an organisation's ability to consistently create-value (Wieland 2005; Gabrielsson 2007; Corbett 2007).

Different streams of literature have developed different concepts, for example, (Hakala, 2011), defining orientation as principles that direct and influence the activities of a firm and generate the behaviours intended to ensure the viability and performance of the organisation. Based on the understanding, Olivier and Veronique (2009) argued that the essence of EO is to establish how entrepreneurs implement entrepreneurship in the course of realizing their career ambition. The diversity of EO, in terms of content and research scope, demands that a thorough exploration of the EO held by entrepreneurs within an organisation is accomplished in a multi-dimensional manner.

EO, originating from the conceptual theory of corporate entrepreneurship established by Guth and Ginsberg (1990), is defined as the study of corporate entrepreneurship with a tendency to focus on internal innovation and venturing but on a broader perspective that involves creation of new wealth through combination and allocation of resources (Lyon, Lumpkin and Dess 2000; Fang, Yuli and Hongzhi 2009). This focus includes actions such as refocusing a business competitively, making major changes in marketing, distribution, redirection of product development and reshaping operations using resourceful human capital. This human capital directs and monitors the decision-making processes and implementations of strategies in a drive to achieving organisational goals and objectives (Kor 2003; Kor and Sundaramurthy 2009).

This study adopts views in line with Miller (1983); Coven and Sleven (1991); Lumpkin and Dess (1996); and Chang, Lin, Chang and Chen (2007), which simplifies how organisations can be entrepreneurially successful through innovation and venturing. This success is owing to strong board and executive support, and creation of settings that allows an enabler of corporate entrepreneurial activities to flourish, with the intentions and actions of key decision players functioning in a dynamic generative process aimed at pre-empting emerging opportunities.

1.5.2 CGS

CGS have been widely used by researchers, academics, policy makers and organisations' decision makers as a centre point for guidelines in leading the organisation going forward (Brickley and Zimmerman 2010). The importance of corporate governance in reshaping economic growth and sustainability in both developed and emerging economies (Mans 2011), through EO, cannot be overlooked. Corporate governance is distinct. Haniffa and Hudaib (2006), point out that corporate governance plays a vital role in promoting efficient use of resources both within the organisation and the larger economy while at the same time, fostering a positive interaction between the organisation and economics both domestically and globally.

Corporate governance regulations and institutions that monitor transformation and (Malherbe and Segal 2001) decision controls have to be strengthened. Boards, and business executives, have to be well informed as to their obligations and responsibilities in ensuring proposed growth and sustainability in business opportunities and venturing. In developing and transformational economies, such as South Africa, organisations are moving into a market-oriented system, which entails economic liberalization and enterprise reform for growth and sustainability (Lau, Fan, Young and Wu, 2007). Similarly, Haniffa and Hudaib (2006); Li, Moshirian, Nguyen, and Tan (2007); Bhagat and Bolton, (2008); Ibrahim, Angelidis, and Howard (2007); and Windsor (2009), point out that corporate governance codes have been reformed to strengthen the roles and power of decision makers' involvement in providing, monitoring, ratifying and overseeing of all important corporate decision processes that will impact positively on organisations' entrepreneurial long-term performance.

Different definitions of corporate governance have been advanced and viewed from different conceptual interpretations, and research foci, for example, Gillan (2006); Windsor (2009); Brickley and Zimmerman (2010) point out that corporate governance is the system by which organisations are directed and controlled. Henderson and Cool (2003); Gillan (2006); and Windsor (2009), recorded that corporate governance is a concept that deals with the ways in which suppliers of finance to corporations assure themselves of a return on their investment. Other researchers use different definitions such as Wieland (2005) who defined corporate governance as organisations' resources and capability, including moral resources, to take on responsibility for all its stake holders. Larker, Richardson and Tuna (2007) defined the term as "The set of mechanisms that influence the decisions made by management when there is separation of ownership and control". (Larker, Richardson and Tuna 2007:964).

At this juncture, it is imperative to reiterate that there is no universal agreement or accepted definition of corporate governance (Gillan 2006; Windsor 2009; Brickley and Zimmerman 2010; Mans 2011).

However, a broad definition of corporative governance as emphasized by Gillan (2006) who declares the centrality of governance structures to be split into two broad classifications; Internal and External. Brickley and Zimmerman (2010) postulate, in an in-depth expression of governance structures, as a guiding instrument for top-level decision-makers processes and controls which serve the interests of shareholders, the board and its executive.

Gillan and Starks (1998) defined corporate governance as the system of laws, rules and factors that control operations in an organisation, supported by Brickley and Zimmerman (2010) who expanded this view as:

> "The system of laws, regulations, institutions, markets, contracts and corporate policies and procedures that direct and influence the actions of the top-level decision-makers in the organisation" (Brickley and Zimmerman 2010: 236)

This definition integrates the role and responsibilities of top-level management with the core competence of the organisation to ensure process and decision are monitored to the benefit of the organisation. King II (Dekker 2002), refers to CGS as:

> "Institutional activism within an organisation and the emphasis on the sustainability…of its' performance, boards and executives' involvement in decision controls in applying the test of fairness,… transparency to all acts or omissions and be accountable to the organisation and stakeholders" (Dekker 2002:2).

Drawing from the above, and for the purpose of this study, I propose a definition of corporate governance that aims to combine the broader view of governance structures. These governance structures are defined as top-level leadership, management and control mechanisms for decision-making processes, monitoring and controls that facilitate the board and executives' effectiveness, and commitment to encourage organisations' strategic entrepreneurially oriented initiatives. All of these should support management preferences for risky-venturing and create an appetite for innovation, change and drive to be ahead of competitors in all industrial market offerings thus enhancing the long-term competitive position of the organisation in achieving sustainability (Gillan and Starks 1998; Dekker 2002; Wieland 2005; Haniffa and Hudaib 2006; Li *et al.,* 2007; Bhagat and Bolton 2008; Ibrahim *et al.*, 2007; Windsor 2009; Brickley and Zimmerman 2010).

1.6 Research question and hypothesis development

Based on the integrated broad context, existing theory and literature on CGS and its' dimensions (board effectiveness and competence, board knowledge and experience, board commitment and recognition of complexities, board involvement in decision-making processes and controls); with EO dimensions (innovation, proactiveness and risk- taking) this research work will be organised under two research questions with two hypotheses being formulated.

1.6.1 Research question 1

What is the relation between the various dimensions of EO and CGS?

1.6.2 Research question 2

What is the relation between the constructs EO and CGS?

1.6.3 Hypothesis development

The following are the hypothesis developed from the multi-dimensional construct of EO and CGS.

H1: Each of the dimensions of CGS is positively correlated with each of the dimensions of EO.
H2: The composite measure of CGS is positively correlated with the composite measure of EO.

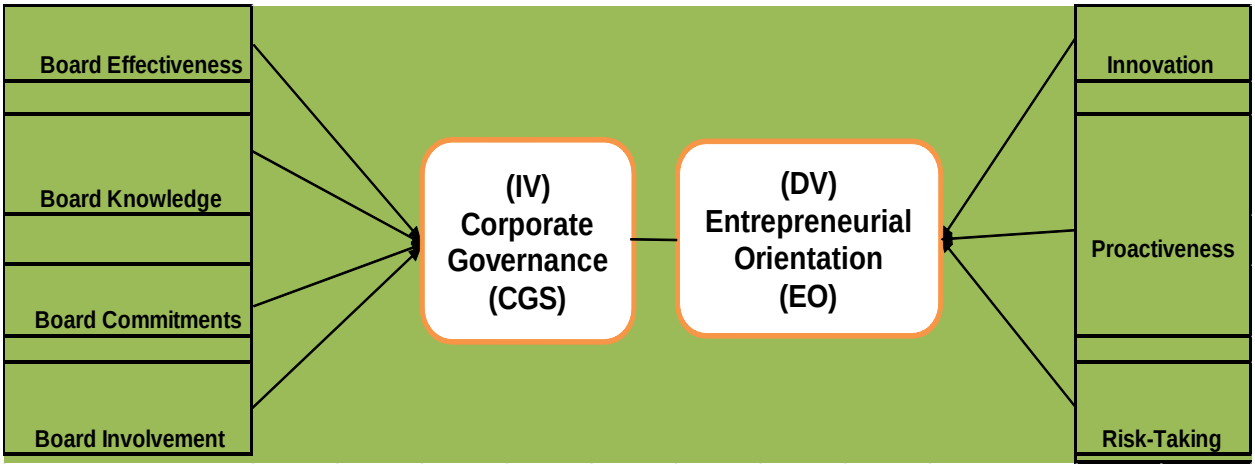


Figure 1: Relationship between EO and CGS.
(Adopted from working paper: Lee, Chen and Chen 2008:6)

1.7 Delimitations of the study

The purpose of this paper is to provide an overview of good corporate governance practices with regard to governance structures that shape EO in the oil and gas industry in South Africa.

In order to accomplish this challenging task, a general overview of the sector is outlined and some background information on current operations provided. The study focuses on how boards and executives effectiveness, competence, knowledge, experience, commitment, ability to handle complex challenges, and their involvement in decision-making processes and control, influence and impact on management support and preferences for EO in the organisation.

Prior studies have focused on and provided the diversity of activities that make up the value chain of the oil and gas industry in South Africa; however this study focuses on how governance structures in different organisations within the industry have evolved over time in fostering EO. For instance, innovative production of oil and gas includes some aspects of exploration, refining, capacity building, transportation, storage and distribution; but excludes the retailing sector of the industry (SAPIA 2009; Adams 2009).

The approach adopted in compiling this report is based on prior literature, reports of relevant bodies, and interviews with key stakeholders. In addition, some company board and executives were interviewed in order to gain more insight into industry specific challenges, however were not included in this study. It should be noted that statistical information provided in this paper is restricted by the availability of relevant information. Furthermore, in many instances the analytical comparison of the information has been hampered by a number of factors, including the lack of access to the target population as a result of their tight daily commitments.

Considerable data information is sourced from the South African Petroleum Industry Association (SAPIA), Business Monitor International (BMI) that conducts extensive studies into the global oil and gas industry, and Vibrant Media South African that captures and stores data of key decision makers and top management in the oil and gas industry. The study cautioned that the results should be viewed with circumspection and not be generalized.

In the following chapters, the theory and existing literature on EO and CGS is presented. Thereafter, the research method is discussed, followed by the analysis and recording of results. The discussion of the results follow, implications offered,

and the most important limitations of the study addressed, before ending with the major conclusions.

2 LITERATURE REVIEW

2.1 Introduction

This section introduces the review of existing literature and theory on the constructs and operationalization by integrating EO and CGS. The literature contained herein is based on existing theory and empirical evidence.

The section proceeds by looking at literature on EO dimensions and then, CGS to gain an insight on existing theories that characterise CGS and EO that impacts organisations' entrepreneurial activities. The section will conclude with a rigorous literature analysis on the relationship that exists between EO and CGS and the existence of boards of directors' involvement in the entrepreneurial strategic decision process as a base of debates.

2.2 EO background of discussion

In an emerging economy such as South Africa, one of the primary goals of the organisation is growth and this can be achieved by organisations that continuously innovate in the face of challenges (Urban 2010). EO is one of the prerequisites for organisational success and increased performance (Urban 2008). Fang *et al.,* (2009), point out that any organisation with strong EO support appears to be innovative and always willing to encourage creative initiatives in new products and service development, and in the advancement of new technologies and novel ideas. Similarly, Urban (2008) stated that organisations posited with EO tend to outperform others in volatile environments. A distinctive level of higher performance in organisations with more adaptive EO is observed.

In this view, Morris *et al*., (2008), point out that politics and shareholders interest in the corporate work environment is such that organisations are inherently politically made up, with individuals acting in their own interest and preventing corporate

entrepreneurial initiatives that support sustainability and corporate competitive advantage. The South African Global Entrepreneurship Monitor (GEM) report (Herrington *et al.,* 2009) outlines how the economy is being driven by entrepreneurship innovation; how industries are experiencing improvements in varying degrees of sophistication that can only be achieved through creative thinking, increased research and the development of high technology change and corporate EO.

The 21st century is geared towards an economic environment driven by technology through organisational EO (McGuigan and Henderson, 2005). Not only are organisations adapting to changes within this environment but they also seek to reorientate themselves through strategy for entrepreneurial initiatives. Urban (2010) contends that established EO is an important element in the organisation which fosters sustainability, economic development and job creation. With this potential contribution of orientation to corporate entrepreneurship, scholars and researchers have made several attempts to establish the factors that promote EO in the organisation (Lumpkin and Dess 1996). Among the most important of these factors, as identified by Aiginger, Okko and Pekka (2009), is the continued support of senior executive and the disposition of managerial EO preferences in the organisation.

For the organisation to be entrepreneurially successful, through innovation and venturing, strong managerial support, the creation of a favourable organisational setting, and governing board involvement in strategic entrepreneurial decision controls' can shape an environment where corporate EO can flourish (Covin and Slevin 1991). Many executives who support corporate entrepreneurship do so at a considerable risk, as observed by Crawford (1987), where more than 80 per cent of new products introduced by organisations failed while nearly 30 per cent of all international ventures succeeded. In the same way executives who thrust their organisation into new international markets are faced with numerous risks, among which are political, social, markets and government intervention via regulatory requirements, leading to uncertainty of these new markets; EO should be encouraged both internally and externally by organisations for continued rejuvenation of business viability, value creation, growth and sustainability.

The concept of EO incorporates an organisation consistent set of related activities or processes (Olivier and Veronique 2009), practices, and decision-making activities that lead to new venturing. Prior theory and research (Dunkelberg and Cooper 1982; Lumpkin and Dess 1996; Covin and Slevin 1991; Chang *et al.,* 2007) indicate that EO simplifies how organisations can be entrepreneurially successful through innovation and venturing with strong managerial support and the creation of settings that allows an enabler of corporate entrepreneurial activities to flourish.

Business researchers and scholars have built an extensive literature on EO and how this concept relates to different organisational set ups, performance and increased innovative productivity, for example Chang *et al.,* (2007) finds a significant positive relationship between EO dimensions and manufacturing flexibility, similarly, (Keh, Nguyen, and Hwei 2007; Avlonitis and Salavou 2007; Frishammar, Horte, and Ake 2007; Urban 2008; Kropp, Lindsay, and Shoham 2008; Stam and Elfring 2008; Ezirim and Nwokah 2009; Perez-Luno, Wiklund and Cabrera 2010; Fairoz, Hirobumi and Tanaka 2010; Javalgi and Todd 2010), found support that EO has a positive correlation with overall organisational performance in new venturing, introduction of novel ideas in product development, improvement on services, new market penetration, market share growth, and management commitment to human capital development.

However, little research has been previously conducted which focuses on the relationship between EO and CGS in this context. Most of the investigations of this relationship, that shapes organisations' creative initiatives, have found inconclusive results, with partial or no supported relationships. Hughes and Morgan (2007) recorded that the influence of EO on business performance might be inconsistent and found no relationship between the EO dimension of risk taking with business venturing and performance, where Kropp *et al.,* (2008), predicted that the innovation component of EO is not a factor in new venture start-up decisions. Such inconsistency and mixed results have created a gap in the expansive EO theories and illustrate the relevance of further EO investigation and in particular, due to the lack of empirical evidence, the links between EO and CGS that shapes the entrepreneurial decision making process.

According to Jogaratnam and Tse (2006), theories classified EO characteristics that suggest a definition of EO as an organisation's overall competitive orientation or the composition of competitive options embedded in an organisation's operations and structure, which they use to gain competitive advantage within their industry.

Researchers have adopted different approaches to the assessment of EO, Miller (1983), formed one of the earliest dimensions to the assessment of EO constructs, and geared towards:

> "Innovation in the product-market field by carrying out risky initiatives, and which are the first to develop innovations in a proactive way and in the face of technological change in an attempt to gain competitive advantage over their rivals", (Miller 1983: 771).

and suggests, as recorded by (Barringer and Bluedorn 1999; Voss *et al.*, 2005; Jogaratnam and Tse 2006; Hughes and Morgan, 2007; Chang *et al.,* 2007; Naldi *et al.,* 2007; Gabrielsson 2007; Kropp *et al.,* 2008; Fang *et al.,* 2009; Williams and Lee 2009; Hakala 2011; Casillas, Moreno, Barbero 2010; Fairoz *et al.,* 2010) that innovation, proactiveness and risk taking are three main components of an organisation's strategic posture that comprise a basic uni-dimensional orientation.

Prior studies have confined and adopted the innovative, proactive and risk-taking approaches of EO, which are measured as independent dimensions (Hughes and Morgan 2007). Through empirical investigation the psychometric properties have shown that these three main attributes of EO constitutes the best model (Urban 2008), and vary independently. Hughes and Morgan (2007) further argued that the independent variation of these three sub-dimensions of EO neglects the individual influence of each dimension and may mitigate a generalised uniformity that may influence results by each dimension. In contrast, two attributes of EO; competitive aggressiveness and autonomy were added by Lumpkin and Dess (1996) to further asses EO on organisations response to threats - where autonomy refers to:

> "Independent action of an individual or a team in generating an idea and carrying it through to completion" (Chang *et al.,* 2007:1000).

The five dimensions of EO are central to management involvement and understanding of the entrepreneurial process which may vary between different organisations, depending on the entrepreneurial opportunity they target (Urban 2008). However, in consideration of the above, and other existing theories, the level

of EO in an organisation may be positively or negatively influenced by corporate governance systems adopted and implemented by boards and their executive monitoring of the processes of operations (Casillas *et al.,* 2010).

This study proposes to explore the relationship between the three EO dimensions – innovativeness, proactiveness and risk-taking, and CGS, notwithstanding the independence of the EO dimensions as proposed by (Lumpkin and Dess 1996). This proposition is consistent with prior studies in assessing EO at organisational level, as can be seen in the following examples,

- Kreiser, Marino and Weaver (2002) established that the three main attributes of EO has a significant contribution to the organisation's performance.
- Hung and Mondejar (2005) evaluate corporate directors and entrepreneurial innovation based on the three sub-dimensions of EO.
- Gabrielsson (2007) and Kropp *et al.,* (2007) conceptualised the relationship between the board of directors and entrepreneurial posture using the three main attributes of EO.
- Urban (2008) and Green, Covin and Slevin (2008) operationalized EO using the three sub-dimensions.
- Casillas *et al.,* (2010) and Engelen (2010) operationalized the EO construct using the three main attributes – innovation, risk-taking propensity and proactive competitive posture.

2.2.1 Entrepreneurial Innovation

In a continuously changing environment along with the effects of globalisation, the marketplace has changed. This change has been made through innovation and technological dispensation where the ability that an organisation has to launch successful product innovation (Avlonitis and Salavou 2007), and adapt to a state of flux where the very basis of competition within the corporate environment is constantly and globally redefined, is important. For an organisation to remain competitive or gain competitive advantage over its rivals in an increasing complex world, innovation is the key.

This section is focused on innovation at organisational level and how the decision making process and styles within the organisation influences managers' disposition or support for entrepreneurial innovative initiatives. It also aims to review prior existing theory and research that characterizes this concept.

Drawing from prior studies, Schumpeter (1934), describes entrepreneurial innovation as initiatives and ideas posited in the organisation whose creative EO is seen as disruptive or / and constructive in industry economic equilibrium. Damanpour (1991) observed that corporate innovation is a broad concept that generally includes the generation, development, and implementation of new ideas or behaviour in an existing organisation. This is supported by Tidd, Bessant and Pavitt (2001) who defined innovation as a process of thinking creatively and successfully implementing the creative ideas in the organisational goal. A willingness to introduce newness and novelty through experimentation and creative processes; aimed at developing new products and services, as well as new processes within existing organisations is important (Lumpkin and Dess 2005).

The managing of innovativeness can be quite challenging and for an organisation to be in a position to continually initiate entrepreneurial innovation, they have to depart from existing technologies and practices, and venture beyond (Lumpkin and Dess 2005) through inventions and creative novel ideas for effectively producing, assimilating, and exploiting innovations for achieving competitive advantages. Guth and Ginsberg (1990) developed a view of corporate entrepreneurial innovation where they argue that successful organisations make radical and more frequent product and process innovations than unsuccessful organisations. Furthermore this is consistent with Lumpkin and Dess (2005), Chang *et al.,* (2007), and Avlonitis and Salavou (2007), who found that organisations with a strong tendency to innovate, and may facilitate their capability to accelerate the development of new products, increase product variety, and adjust production volume fast.

The tendency to engage in and support new ideas, novelty, experimentation, technological leadership, R&D, and creative processes (Lumpkin and Dess 1996; Hughes and Morgan 2007), that may result in new products, services, or technological processes to create differentiation and develop solutions that

undermine those of competitors can be complex should the decision making processes within the organisation not support managers preferences to act entrepreneurially.

According to Morris *et al.,* (2008), entrepreneurial innovation is aligned within the corporate environment and systems as is broadly seen as the introduction of new product or services, a systematic or administrative change (new way of doing things) or a new plan or program related to organisational structure. The oil and gas industry in South Africa is categorized as a technological, innovative driven sector and organisations within this industry (Urban 2008) are judged according to how they use technology and innovation to achieve competitive advantage and the organisation's objective. It is observed that the processes of innovation and technological transformation differs from industry to industry (Wu 2008), while some industry adapts rapid and radical innovations, others follow minimal incremental innovation and technological transformation.

In this view, Wu (2008) stipulates that a high level of innovation is associated with spending in R&D investments that may trigger technological opportunity, however, high levels of R&D spending may result in a long payback period and managers within this industry should have support from decision makers to engage or encourage investment in product innovation, and processes in times of uncertainty.

It is known that innovation can come in different forms, as recorded by Lumpkin and Dess (2005), that technological innovation consists of engineering and research efforts designed to facilitate the development of new products and processes (product-market innovation which includes market research, product design and innovation in advertising and promotion), while administrative innovation refers to expertise in creating new ideas in management systems, control techniques, and organisational structure. Frishammar *et al.,* (2007), found that innovation is positively related to new product development (NPD), and that organisations need to be entrepreneurially oriented through radical innovative initiatives in the face of uncertainty in determining what alternative products consumers would like.

Innovation could be one source to achieve organisational growth and progress, and with strong support from the decision making process and (Lumpkin and Dess 2005), a long-term commitment to invest in new technology, R&D, and continuous improvement in innovative initiatives, that are hard for companies to imitate successfully, will be rewarding to the organisation. In this view, Voss *et al.*, (2005), found that innovativeness has a positive and significant association with creative support from organisations entrepreneurial decision makers. Similarly, Gabrielsson, and Diamanto (2006), found that board involvement in decision controls may promote innovative creative initiatives but that different kinds of decision controls influence different forms of corporate innovation and also recognise that the concept of innovation consists of numerous organisational activities that promote long-term value creation.

2.2.2 Proactiveness

Proactiveness refers to an on-going perspective where an organisation actively seeks to anticipate and take advantage of opportunities to develop and introduce new products and implement changes to existing organisational strategies and tactics, and the ability to detect future market trends while securing first-mover advantage in the short-term and shaping the direction of the market environment in the long-term (Lumpkin and Dess 1996; Lyon, Lumpkin and Dess 2000; Lumpkin and Dess 2005; Hughes and Morgan 2007).

Henderson and Cool, (2003) found out that managers decision making to be the first-mover may be affected by biases, and if the organisation's governance structures do not support EO, they may fail to consider developing uniqueness in new product development that their rivals may find difficult to copy. Lumpkin and Dess (2005), argue that being an industry leader does not bring about economies of scale and that organisations act proactively in two ways by; introducing new products or technological capabilities ahead of their competition and continuously seeking out new products or service offerings.

Chang *et al., (*2007), postulate that a proactive organisation does things ahead of their rivals rather than after. They lead in the development of new technologies,

products and services as well as capacity building to enhance growth, while Keh *et al.,* (2007) argue that proactive orientation enables organisations to be innovative and utilizes internal sharing of knowledge and information (Keh *et al.,* 2007), to exploit competitors' novelty.

Striving to be a 'first mover' to capture the benefits of industrial pioneering is a process that deals with the ability managers have to implement organisational core competence in relation to strategies set out for entrepreneurial activities through creative initiatives, as opposed to the traditional norms present within the organisation (Green *et al.,* 2008), which involves considerable perseverance, adaptability, and a willingness to assume responsibility for failure.

An organisation acting in a proactive way captures the intensity and drive to continually seek and seize opportunities, (Casillas *et al.,* 2010; Perez-Luno *et al.*, 2010), embed with future prospects and trends through new product venturing ahead of rivals, and at the same time adopt best practice principles in meeting customers demand, while creating change through governance structures that will shape the environment for long-term competitive advantage. Proactive orientation enables organisations to be innovative and utilizes internal sharing of knowledge and information (Keh *et al.,* 2007), to exploit competitors' novelty.

Prior studies have found that proactive organisations adopt close monitoring of technological trends and are able to identify future needs ahead of competitors. For example, Chang *et al.,* (2007), claims that proactiveness has significant positive effect on new product flexibility enhancing an organisations' capability to be 'first mover' through aggressive introduction of new products and services, while controlling production volume to meet market demand at any point in time. Similarly, Avlonitis and Salavou (2007), state that entrepreneurial attitude present in a proactive entrepreneurial organisation is primarily mirrored in their aggressiveness and capability to develop new products and services and continuously monitor technological trends in order to identify future needs. By identifying external opportunities, (Fang *et al.*, 2009) foreseeing and forecasting changes in the environment, provides opportunity to develop new products and services, ensures that the corporate organisation has a significant positive relationship with

proactiveness. Likewise, Perez-Luno *et al.,* (2010) found that proactivity influences innovation and the organisations' orientation to act entrepreneurially in meeting future demands.

A proactive organisation that continuously seeks opportunities in new markets, customers' offers, and generation of new ideas related to the operations and technologies, may likely adopt an innovation process generated by others (Perez-Luno *et al.,* 2010). This approach will result in the introduction of new products in the market place without necessarily having to go through the internal processes of learning as the knowledge already exists and can be exploited or adopted. A proactive organisation does not just copy and reproduce but also conducts R&D and experiments to ensure that the generation of genuinely novel products and services will survive the downside of a 'first mover', such as customer's resistance and unforeseen technological changes. It is known that proactive organisations act on information to take advantage of the market ahead of its competitors, for example, Hughes and Morgan, (2007) found that proactive organisations continuously monitor technological trends and act in advance of change through information and identifying future needs to better serve customers by leveraging on the organisation's responsiveness and capability to act ahead of competitors.

Keh *et al.,* (2007), states that information acquisition is positively related to an organisations' proactive orientation which involves the ability an organisation has to discover and intentionally satisfy an unanticipated need of the customer, through collecting customer- and competitor-based information. Frishammar and Horte (2007), argue that proactiveness should impact positively on new product development allowing high growth, in the absence of competing products. In the same way, Li, Huang and Tsai (2009), emphasized that entrepreneurial organisations act proactively to obtain knowledge and information from customers and competitors and tend to use it to undo their competitors.

In conceptualization of proactive orientation, organisations have the propensity to focus on the introduction of new products and services ahead of their rivals through using customer- and / or competitor-based information to increase their capacity to recognize opportunities that emerge outside (Keh *et al.,* 2007). Furthermore,

venturing to capture the benefits of industrial pioneering ahead of their rivals, Kropp *et al.*, (2008), proposed the enhancing of an organisations ability to pioneer new methods, processes, technologies, dynamic management and decision making styles, in combination with their ability to constantly monitor new developments in their external environment (Stam and Elfring 2008).

Corporate organisations are perceived to have stable structures and established systems and regulations in place. Fang *et al.,* (2009), argue that strict management and organisations' bureaucracy embedded in functional structures often lead to knowledge and information sharing, thus limiting managers to act proactively, hindering innovation, and distorting plausible environments for opportunity recognition. In contrast, Williams and Lee, (2009) and Perez-Luno *et al.,* (2010), postulate that a proactive oriented organisation should be engaged in exploring and exploiting market and investment opportunities other than internal R&D. With reference to Penrose's (1959) concept of 'empire-building' the entrepreneurial organisation will take an equity stake in innovative and risky ventures, investing in new technological equipment to give existing production new capability and spin-off new units by encouraging internal venturing through innovation generation or adaptation to gain competitive advantage.

2.2.3 Risk-Taking

Organisations are always confronted, either voluntarily or compulsorily, with the challenges of uncertainties and potential financial and social losses when venturing into new products and services. These organisations have to make decisions and taking action without knowledge of expected outcomes (Lumpkin and Dess, 2005) and make huge financial and resource commitments in the process of venturing forward for growth and sustainability.

In this section, the current study is focused on entrepreneurial risk-taking at organisational level and how the decision making process and style within the organisation influences managers' orientation and preferences to engage in risky venturing initiatives. It also reviews prior existing theory and research that characterises this concept.

Risk-taking, according to Voss *et al.,* (2005), is a commitment to experimentation in the face of uncertainty. Miller and Meelis (2005) established that the period post-1994 introduced changes in South African legislation, which had a significant negative effect on the oil sector. In the same way today, legislative imperilments have shifted to the Gas and Petrochemical sector. The external environment is perceived to be risky and the involvement of directors in the decision-making process could impact on management preferences for risk-taking. However, as stipulated in King III (IOD 2009), directors should ensure that there is an effective risk-based internal audit responsible for the process of risk management and appreciative that strategy, risk, performance and sustainability are inseparable thus, changing the interface of governance systems from a dominant directorship to a participative entrepreneurial approach (Dekker, 2002). Chang *et al.,* (2007) pointed out that a generous environment without competitive position may not provide organisations with a stimulus to take risks the same way excessively hostile environments will discourage risk-taking initiatives.

Before embarking on any entrepreneurial venturing, and development of new products and services, the organisation should gauge how far is it willing to go, without knowing what the outcome will be, irrespective of their being aggressive, proactive or innovative (Lumpkin and Dess, 2005).

According to Henderson and Cool (2003) oil and gas is an industry where organisations often have to make capacity additions, innovate regularly due to rapid changes in technological advancement and the emergence of alternate product and services. This process involves internal bureaucracy, strategic decision making, creativity, innovation (Lumpkin and Dess 2005), and directors involvement in setting a bold, aggressive posture in order to maximize the probability of exploiting potential entrepreneurial opportunities. This in turn, involves a high degree of personal, business and financial risk-taking, as organisations in this industry take such risks assuming high levels of debt, committing large amount of resources, introducing new products into new markets and investing in unexpected technologies or high-risk projects which promise high returns (Barringer and Bluedorn 1999; Chang *et al.,* 2007; Frishammar and Horte 2007).

For organisations to be entrepreneurially risk oriented, they and their directors are faced with business risk-taking which involves entrepreneurial venturing into the unknown, full of uncertainty without having enough knowledge of the environmental impediments, (Lumpkin and Dess 2005). Prior studies have linked this type of risk-taking orientation with the introduction of untested technology; entering new market with new product and services that could be subject to unforeseen technological problems and customer resistance (Miller 1983; Chang *et al.,* 2007; Casillas *et al.,* 2010). However, Lumpkin and Dess (1996) and Hakala (2010) argue that risk-oriented organisations acting entrepreneurially are better able to adjust their operations in a dynamic competitive environment, change and shape the market environment with their appetite for risky venturing and a willingness to commit resources to explore and exploit new business opportunities embedded with uncertainty on their return on investment.

Risk-taking influences an organisations' willingness to innovate either through generation of new untested novel ideas and technologies or through the adoption of existing and tested techniques and processes that have worked in other domains. For example, Perez-Luno et *al.,* (2010) found that the number of innovations generated and the extent to which organisations favour generation over adoption of innovative initiatives is influenced by their level of risk-taking orientation. This is consistent with EO literature which established that greater innovation is significantly related to greater risk-taking and an organisations' capability to act in a proactive way rather than a reactive one (Perez-Luno *et al.,* 2010).

Oil and gas is an industry in which organisations have to make huge capacity expansions, be constantly innovative in the face of changing technologies and human capital expertise. When utilization of existing capacity is tight with a positive bottom line, management and decision makers are prompted to invest in capacity expansion to meet new market demand that may result in increased revenue and earning potential. However, organisations are confronted with the problem of investing at the right time. If investment is not well planned through knowledge, competitor-based information and environmental scanning, organisations have the tendency to invest simultaneously with its rivals, which may result in excess capacity and poor return in investment (Henderson and Cool 2003).

In this paper, financial risk is used to refer to the probability of low or high return on investment in capacity building, R&D, or commitment of a large portion of resources in order to promote entrepreneurial risk-taking and investment in high-risk projects. These promise high returns, consistent with previous studies for example, Lumpkin and Dess (2005) refer to financial risks-taking as the risk/return trade-offs that are common in financial analyses. Similarly, Javalgi and Todd (2010) assert that organisations' financial and resource commitment to human capital development and access to new technology is a financial risk-taking initiative that allows them to take advantage of their entrepreneurial capabilities in order to enter the challenging new business environment with a probability of low or high return.

Based on the above, the entrepreneurial organisation needs a proper level of business, financial and personal risk-taking to gain competitive advantage over its rivals. Personal risk-taking according to Lumpkin and Dess (2005) refers to the risk that any director or manager assumes in taking a stand in favour of a strategic course of action.

Striving to be a 'first mover' to capture the benefits of industrial pioneering, through corporate entrepreneurial venturing, is most vulnerable in its early stage (Frishammar and Horte 2007; Morris *et al.,* 2008). Corporate directors and management must develop a willingness and strategy to protect internal venturing from early mortality by taking a risky stand in a consistent and mutually acceptable decision-making style. This should be by sharing knowledge and information on the downside of a 'first mover', such as customer's resistance to novel ideas, and by bearing the cost associated with unforeseen technological changes and failure in new markets (Barringer and Bluedorn 1999; Lumpkin and Dess 2005; Morris *et al.,* 2008).

The pressure for reform in corporate governance shows that risky venturing and management is becoming more complex by the day, and inattention to entrepreneurial organisation as well as poor risk-taking orientation can erode competitive advantage (Drew, Kelley and Kendrick 2006). In addition to the challenges of regulatory reforms, the South African oil and gas industry should position itself to manage risks that threaten its long-term competitive success and

survival, such as risks to its market position, critical resources and its ability to innovate and grow (Lumpkin and Dess 2005; Drew *et al.,* 2006). Even when it is perceived that risky venturing is like taking chances, successful entrepreneurial organisations investigate the probability of success or failure and the associated cost of various opportunities and develop strategies to handle the possible outcomes.

Decision makers should not overlook the dangers and pitfalls of risky venturing as the cost implication of insufficient forethought is enormous. Entrepreneurially oriented organisations are really not risk takers however; Lumpkin and Dess (2005) stated that they strategize to reduce risks in exploiting opportunities. They focus on minimizing the riskiness of business decision-making since corporate entrepreneurial venturing involves embracing what is new and uncertain, researching and assessing risk factors to reduce uncertainty and the application of tried and true practices and techniques that have worked in other domains should be part of organisations' methods in strengthening their competitive posture through risk-taking.

2.3 Corporate governance background of discussion

CGS has been widely used by researchers, academics, policy makers and organisations' decision makers (Brickley and Zimmerman 2010). The importance of corporate governance in reshaping economic growth and sustainability, in both developed and developing (Mans 2011) economies, through EO cannot be overlooked. Corporate governance is distinct. Haniffa and Hudaib (2006), point out that corporate governance plays a vital role in promoting the efficient use of resources both within the organisation and the larger economy while at the same time, fostering a positive interaction between the organisation and the economies both domestically and globally.

According to Core, Holthausen and Larcker (1999), prior literature on corporate governance has focused on ownership structure, the agency problem and alternative structures for the board of directors. This explains the evidence of increasing failure of certain governance structures to support managers' preferences of innovation, risk-taking and acting proactively in the face of technological changes, thus

increasing and sustaining the organisations performance. To date there has been mixed empirical evidence on how corporate governance impacts managers' support or disposition on entrepreneurial initiatives in an emerging and transitional economy such as South Africa.

This section is focused on what shapes effective corporate governance systems as an enabler for directors, executives, and decision maker's involvement in strategic controls, decision making processes and styles within the organisation that influences managers' disposition or support for EO in the organisation in which these entrepreneurial activities take place, and to review prior existing theory that characterized this concept.

Based on the above, I have chosen to write the literature review on corporate governance from a management-based perspective. The first part will be a general discussion on the conceptualization of corporate governance. This discussion will focus more on the impact posited by the universal and internal use of these perspectives in business management. The second part of the literature review on corporate governance will elaborate more on the operationalization of corporate governance dimensions such as boards and directors' effectiveness, competence, knowledge, experience, recognition of complexities and involvement in strategic decision controls, how these systems support or oppose management preferences, and their ability to encourage EO.

2.3.1 Conceptualising corporate governance

One potential influence on corporate EO which has not received much research attention is the corporate governance paradigm. Haniffa and Hudaib (2006), contend that corporate governance plays a vital role in promoting the efficient use of resources both within the organisation and the larger economy. As a result, regulators have placed CGS to closer monitoring. Corporate governance is broad across all economic dimensions although Windsor (2009) suggests that in as much as corporate governance is distinct, it is closely related to business management and corporate responsibility. Wieland (2005) recorded that governance systems direct and monitor the broad use to which organisational resources are put.

A wealth of literature and theory on corporate governance has unbundled how the global concept of corporate governance, and its promotion of transparency, performance and sustainability in organisations and the economy at large, has evolved. The intervention of government agencies (regulators), the global movement for development and formulation of governance code to harmonize transparency in global business environment (Wieland 2005), has been central in conceptualizing corporate governance. Furthermore the quest to alleviate corporate scandals (Filatotchev and Nakajima 2010) such as corruption, directors' acting with impunity in conflicts of interest (Dey 2008; Allcock and Filatotchev 2010), weakness in management preferences to generate rather than adopt innovation (Perez-Luno *et al.,* 2010), and risk management for greater performance has also played a role in corporate governance conceptualisation.

According to Gillan (2006), Windsor (2009), Brickley and Zimmerman (2010) and Mans (2011) there is no universal agreement or accepted conceptualization of corporate governance. Windsor (2009) points out that the UN Global Compact supports ten principles on good governance systems, while the EU have concerns on good governance systems thus, have promoted governance structures in relation to stakeholders' responsiveness, environmental responsibility and sustainable development (Elkington 2006). Similarly, other organisations and countries are in support of global governance monitoring mechanisms for example, the international organisation for standardization (ISO) focuses on providing guidance on corporate disclosure while the USA, UK, and South Africa, to mention but a few, comply with the Global Reporting Initiatives (GRI). Mexico according to Machuga and Teitel (2009), adopted the code of 'Best Corporate Practice' compatible with their business environment and culture after reviewing the international corporate governance models in 1999. Based on the above, there is evidence that the importance of good CGS in sustainable economic development cannot be overlooked.

In South Africa, the King Report on Corporate Governance (King I) was published by the King Committee on Corporate Governance, incorporating a Code of Corporate Practices and Conduct, the first of its kind aimed at promoting the highest standards of corporate governance in South Africa.

The degree of risk present in the South African oil and gas industry, post-apartheid, is not only internal but has external influences. For example, Dekker (2002) stated in his analytical paper on King II, that organisations have to 'comply if not, explain' matters relating to boards' transparency on take-overs, executives' responsibilities in setting out controls, and monitoring of strategic decision processes that will position the organisation to be economically sustainable.

In the same manner, King III (IOD 2009) extended the duties of boards and executives to be directly involved in strategic decision controls as well as in the implementation of the organisational core competence and code of good practices in their daily operation, including but not limited to compliance with legislative, environmental, energy, labour and national occupational health and safety guidelines in their respective organisations (Miller and Meelis, 2005). Supporting Dekker's (2002) argument that while it is of the utmost importance that companies operate from a base of integrity, in relation to good governance and best corporate practices, there is need that the focus must be on a participative entrepreneurial approach rather than a dominant one.

According to Abidin *et al.,* (2009), corporate practices in South Africa fell behind international norms, as did laws and regulations. South Africa, as an emerging and transitional economy, has adopted international standards in formulating corporate governance systems through the conceptualisation of King I (IOD 1994); King II (IOD 2002); and King III (IOD 2009) report on governance code that will shape and guide organisations towards sustainable economic growth.

The impact of CGS on organisations has been investigated by previous empirical studies. Other prior research studies were based on ownership structures, board composition and compensation, antitakeover measures, and corporate entrepreneurial performance. For instance, Core, Holthausen, and Larcker (1999) found that organisations with weaker governance structures have association with greater agency problems and poorer performance. Aaboen, Lindelof, Koch and Lofsten (2006) identify that directors' knowledge, expertise and experiences have a significant positive association with performance in high-tech organisations. Brunning, Nordqvist and Wiklund (2007), recorded that ownership concentration and

board composition affects the process of strategic change that may bring about improved performance. In the same way, Premuroso and Bhattacharya (2008) postulate that corporate governance is positively associated with firm performance when an organisations' strategic decisions supports taking advantage of industry pioneering in terms of early and voluntary filter of information reporting format. Pant and Pattanayak (2010) provide evidence that the effects of ownership variable on productivity are mostly insignificant on firm entrepreneurial performance. Similarly, Hu, Tam and Tan's (2010) findings suggest that ownership concentration disposes directors and supervisory boards' involvement in decision controls and have a high significant negative association with organisation propensity to take advantage of entrepreneurial opportunities in the market place, thus affecting the organisations' ability to improve entrepreneurial performance.

In contrast to the above prior research on governance structures, there have been few empirical studies of the relation between CGS and board effectiveness, competence, expertise and extent of directors' involvement in strategic management processes (Ibrahim *et al.,* 2007; and Naldi *et al.,* 2007). Recent studies suggest that there is a strong need to further the understanding of CGS, beyond the historical based principal-agent theory that focuses on the different level of access to information and controls between managers and shareholders (Filatotchev and Nakajima 2010). As established by Wieland (2005), an integrative conceptualization of corporate governance will broaden an efficient and effective governance structure in terms of its functionality on constraints and as an enabler in relation to risk management and the organisations capability in taking competitive advantage.

The concept of corporate governance has different interpretations. The same way organisations differ in their objectives and aims, age and size, economic roles and decision making styles, the relevant conceptual governance structures that will shape the organisation in meeting these objectives will differ. However, an entrepreneurial oriented organisation will seek to innovate ahead of their rivals and to achieve this, integration of checks and balances; such as effective and efficient monitoring systems, quality leadership, top-level management control on selection of boards of directors and executives making and implementing strategic decision; will ensure sustainable competitive advantage and growth (Windsor 2009).

The checks and balances in this context are consistent with prior studies, and include: (a) board effectiveness and its competence in discussing and evaluating events and trends in the larger environment that may present specific entrepreneurial opportunity for the organisation, (b) directors and executives' knowledge and experience in the organisational strategic issues such as the organisations' competitive position in the industry environment and the directors and executives ability to examine performance and how well the organisation is doing on long-term entrepreneurial goals, (c) board commitment and recognitions of complexities to foster effective decision and reverse failed initiatives and policies, (d) board involvement in decision controls, such as reviewing and rectifying entrepreneurial opportunities, threats and risks that the organisation may be exposed to (Cutting and Kouzmin 2002; Gabrielsson and Diamanto 2007; Emslie 2007; Ogbechi 2009).

In what follows, this study focuses on corporate governance characteristics that reflect on the extent of boards and executives' capabilities, roles and responsibilities in management monitoring and strategic decision controls. The aim is to identify the impact of these governance perspectives on managerial preferences for sustainable entrepreneurial initiatives.

2.3.2 Board effectiveness and competence

In the concept of corporate governance, the boards have been broadly described as the centrality of corporate governance, and its focal role and responsibility in ensuring continuous implementation of the organisations' strategies as well as monitoring management and shareholder interest for the benefit of the organisation (SAICA 2009; IOD 2009; Mans 2011). Other studies have viewed the board and its executives as the "lynchpin" of corporate governance (Gillan 2006).

Several researchers have identified the key function of the board. For instance, Windsor (2009) indicated that one of the definitive characteristics of effective and competent board is its ability to respond to governance and responsibility pressure with dignity ethics, individually embedded integrity and drive for achievement. The high need for achievement presents challenges before an active governing board

that will necessitate them to perform through effective monitoring of management activities which is an enabler of the function of effectiveness (Miller and Toulouse 1986). Similarly, Hu *et al.,* (2010) stated that the key role of the board of directors is to protect the interest of the organisation by being a participative party on implementing their corporate governance standards. This is done through the boards' effectiveness on checks and balances between diverse stakeholders' interests. According to Chen, Li and Shapiro (2011), boards and executives have a high priority to strengthen their monitoring power that will motivate managerial decision making processes and have the competence to effectively provide external resources to improve managerial performance.

Directors' ineffectiveness in monitoring and implementing organisational by-laws may result in incompetence and executives may be replaced if they perform poorly (Miller 1991), as a result of their self-interest and reactiveness, operating in a comfort zone based on past performance and complacency. The role and responsibility of boards and executives are declared by a country's regulatory framework which serves as a foundation for the guidelines of fiduciary duties the board has to exercise (Okpara 2010). In view of this, many countries have revolutionized the composition of the board of directors in order to foster their operational effectiveness and competence in an attempt to alleviate conflicts of interest by the board and its executives when discharging their duties. Machuga and Teitel (2009) recorded that the board and its executives have the responsibility of exercising disciplinary actions on management and that this can be efficient through; (1) independent outside directors who are competent enough to withstand management and instil pressure on their weaknesses and monitor the process of the organisations earning potential; (2) through board members who are also managers or directors of other organisations who can create an environment that will encourage other executives to build reputable boards through their competence and effectiveness in strategic decision controls.

In South Africa, the board and executive roles and responsibilities are recommended by the King Report on Corporate Governance Code of Best Practice (SAICA 2009) however, the board and its executives requires a skilful approach (Okpara 2010) as well as the conceptualisation of an industrial environment in order to exercise their

competence and ability to challenge management preferences and performance. The context of this study focuses on the industry where organisations often have to make huge capacity expansion. Without an effective and competent monitoring board and executives; who understand the industry environment, monitors demand and supply, trends and forecasts: the management may get their timing wrong by acting proactively on the basis of first movers, without carefully considering the effect of overcapacity building on the organisations earning potential (Henderson and Cool 2003).

In a survey of directors conducted by Maly and Anderson (2008), it was established that there has been a significant positive increase in board effectiveness and involvement in strategy development and operational planning. This will enhance an interactive environment between management and executives that will promote further support for management preferences in creative strategic entrepreneurial initiatives. Increasing regulatory pressures and global competitiveness as well as industrial and financial scandals, requires that the board and executives should be effective and competent to understand the environment in which they operate and develop EO that will shape their organisation to take market advantage of growth, performance and sustainability (Harris 2008; and Windsor 2009).

Recent empirical studies aim at changes in board structure, for instance Ahn and Walker (2007) investigate the links between governance structure and corporate internal or external venturing through diversification and found that greater ownership by outside directors have a larger impact on board effectiveness in supporting business spinoff through diversification. Machuga and Teitel (2009), in the study of board and executive characteristics on quality implementation of governance codes, suggest that structure, in terms of ownership concentration by one minority group, reduces directors' effectiveness to implement change. Hu *et al.,* (2010) focus on internal structure and find that over concentration of ownership hinders directors and supervisory executives' effectiveness and competence. Similarly, Cai and Tylecote (2008) found that ownership type matters influence the management preferences for technological dynamism; however, their findings further postulate that governance influences matters more. The generalized view of these studies is that governance structures impact on the effectiveness and competence of

directors and (Markman, Balkin and Schjoedt 2001) executives, and suggest that board effectiveness may encourage entrepreneurial initiatives in the organisation.

Other studies on corporate governance and board effectiveness in transition and emerging economies reveal that poor performing and ineffective boards have a high probability of being discharged from duty (Lau *et al.,* 2007). Similarly, Okpara (2010) found that boards' effectiveness in executing their roles and responsibilities are hindered by lack of knowledge and expertise relating to industry environment and regulatory framework, lack of commitment on the part of the board and executives, and the extent of their involvement in strategic decision making.

2.3.3 Boards knowledge and experience

The impact of knowledge and experience based boards and executive members and their skills and expertise on governance principles has recently gained attention (Pukthuanthong-Le and Sundaramurthy 2009). For boards and executives to effectively perform, they should have the capabilities, general knowledge and expertise which in effect, (Kor 2003) will reflect on their competence to shape the organisation for entrepreneurial growth. This section focuses on the knowledge and experience posited in the board and executive members that will relatively contribute to the competence of management team, and in performing their roles in taking advantage of opportunities for growth.

Several studies have investigated the impact of knowledge and experience on the upper level of management with a particular attention to board and executives members, with consistent empirical evidence on how knowledge and expertise have influenced board effectiveness. Ensley, Pearson and Amason (2002), in their study on 'Understanding the dynamics of new venture top management teams', report that in the process of venturing, the window of sharing of ideas, critical assessment and evaluation of processes for opportunity forgone, always result in entrepreneurial creative initiatives. The absence of qualified directors in the market place may negatively impact on the ability of the board to perform effectively, and the demand and supply trends of boards of directors have been grossly undermined by shareholders on appointment and recruitment of boards and executives (Larcker and

Tayan 2011). The economic-politics have played a significant role in disengaging professionalization (Allcock and Filatotchev 2010) as one of the basic considerations in appointing and recruiting non-funding executives to ensure a high quality and knowledgeable board that understand the organisations core competence and the board's roles, responsibilities and performance (Mwenja and Lewis 2009).

This context is consistent with Camelo, Fernandez-Alles and Hernandez (2010) who found that board and executives' educational level positively influence organisations entrepreneurial ability to innovate. Consequently, this brought about the underlying reasons for the development of a corporate governance code in response to business failure. Business failure resulted from poor board monitoring, poor planning and implementation of strategies through poor decision making processes (Thomas 2005; Mwenja and Lewis 2009; Kor and Sundaramurthy 2009).

In recent years, organisations are systematically unbundling from bureaucratic conglomerates to flexible corporate entrepreneurial oriented organisation. Fama and Jensen (1983) point out that decision making in an entrepreneurial organisation is a rigorous process from initiating, ratification, implementation and monitoring which can only be effectively achieved with knowledgeable and experienced boards and executives. This argument is supported by Larcker and Tayan (2011) who suggested that an entrepreneurial organisation needs an active board and executive members who have managerial, industry specific and functional knowledge that will shape the organisation going forward.

In today's business environment, organisations are obliged to 'apply' both internal and external governance mechanisms (SAICA 2009; IOD 2009). Boards and executives without industry specific knowledge and a wider experience on business and industrial ethics, environmental and regulatory governance framework, will not only face the failure of statutory compliance, but also within ethical and environmental activities (Arjoon 2005). Previous research studies have expanded on the importance of knowledge and experience as one of the major characteristics that underpin organisations competitive advantage over their rivals in both product and administrative innovation. Larcker and Tayan (2011) established that for an organisation to successfully internalise and establish its products and services in a

global market environment, it is imperative that the board and executives should have international knowledge and experience on strategy, operations, finance, risk management and regulations. Kor and Sundaramurthy (2009) recorded that board and executive industrial specific knowledge and experience have significant influence on organisations growth. Li, Huang and Tsai (2009) in their inquiry into the role of knowledge in organisational EO found that knowledge creation plays a mediating role between EO and performance. Dover and Dierk (2010) in their conceptual framework integrating managers, entrepreneurs, and leaders established that successful entrepreneurially oriented organisations bring different skills, knowledge and experience from different level of top management team that will position them ahead of their rival.

Drawing from our early definition of entrepreneurship as a process in which opportunity is recognised, accessed and selected for implementation through resource allocation; which comes in the form of material and human capital posited in the organisation, it is therefore imperative that board, executives and decision makers initiates the creation of knowledge of opportunities as part of the organisations' entrepreneurial orientation. Williams and Lee (2011) indicated that the stock of knowledge developed by an organisation may represent its main stream of competitive advantage. Organisations require knowledge and experience to guide them on decision controls for diversification through internal and external venturing, position them to understand demand and supply trends and act proactively in taking advantage of industrial pioneering on new opportunity (Corbett 2007); while guiding the organisation in future unforeseen changes in the environment in which they operate. However, Brickley and Zimmerman (2010) emphasized that the board and its executives are in a better position to effectively access corporate governance best practices in their decision making processes through industry benchmarking either by adaptation or generation of governance systems that will enhance their competitiveness within the industry.

The board and its executives should periodically set aside time to learn more about issues both internal and external relating to the industry and organisation they represent (SAICA 2009). This notion is supported by Lockwood (2010) who developed a framework of principles to evaluate governance quality in relation to

board and management effectiveness. This process allows them to evaluate board and executive composition, skills, meeting structure and process, effectiveness in setting strategy, competence in monitoring performance over time, existing relationships between board, management and shareholders (Lacker and Tayan 2011), and improving on areas that are defective.

2.3.4 Board commitment and recognition of complexities

Corporate governance and the process of management, control and monitoring of operational activities are diverse in nature (Cutting and Kouzmin 2002.) Management theory in recent studies focuses on complexities and board commitment to building integrity in order to execute their responsibility (Windsor 2009). Most organisations operate in a complex environment. Armour and Teece (1978) document, in their study of diffusion of the multidivisional structure of organisations in the oil industry, that although some organisations generate innovation to be a leader of industry, others do not. Rather they adopt innovations as a result of the cost associated with acquiring knowledge needed for efficient decision management in such a complex environment. Board effectiveness in decision management and control could be in jeopardy if care is not taken to identify specific knowledge needed for different decisions making processes (Fama and Jensen 1983).

A stream of prior research has developed in the field of management science that examines the evaluation of board commitment and competence in identifying pitfalls of any important decision it is about to make; but not much has been recorded in the entrepreneurship literature (Ensley *et al.,* 2002; Cutting and Kouzmin 2002; Diochon 2010). In the corporate context, an effective board is one that can efficiently implement its role and responsibilities (Nicholson and Kiel 2004); show commitment to the successful execution of the organisations' entrepreneurial strategic decisions (Mustakallio, Autio, and Zahra 2002); and review and approve strategic plans, risk management, valuation of capital commitment and making complex decisions (Kor and Sundaramurthy 2009).

Multiple board membership allows executives to generate professionalism and human capital as a result of a variety of knowledge acquired through interaction and

engagement with members of other boards (Kor and Sundaramurthy 2009). However, a high-level of commitment is required to enable a board member to fulfil their advisory governance role bearing in mind the complexities present in unique strategies and governance control.

In the drive to ensure consistency in the organisations ability to meet future needs through internal or external venturing and sustainable business practices, the board should be committed to strategy development rather than adaptation (SAICA 2009; IOD 2009; Perez-Luno *et al.,* 2010). The board should also effectively facilitate communication across all organisational levels to eradicate information asymmetry or conflict of interest (Hu *et al* 2010), diffusion of imperfect information that makes a long-standing governance practices inefficient (Brickley and Zimmerman 2010).

From the literature on credible financial and shareholder's investment commitment documented by Henderson and Cool (2003), one can deduce that even when an organisation generates a strategy to be ahead of rivals, for instance, in the oil and gas industry where capacity expansion is obvious, developing pre-emption strategy, by building enough capacity to supply all expected demand. This may trigger competitors within the same industry to follow the same investment behaviour to capture a market share from increasing demand. This may result in overcapacity in the industry which may lead to poor return. Similarly, an organisations' commitment to entrepreneurial initiatives (Daellenbach and McCarthy 1999) are influenced by both internal mechanisms such as: boards and its executive effectiveness in monitoring operations, knowledge and experience posited in their decision making processes and structures; and external environmental factors, namely: dynamics of outside directors, boards knowledge and experience on regulatory framework and how they recognize and comply with environmental and ethical complexities within the industry they operate.

However, several empirical studies have shown evidence that organisation commitment to internal and external entrepreneurial venturing depends on board commitment on executing strategic governance and management systems to become industry champions in the face of complexities. As documented by Henderson and Cool (2003); Gabrielsson and Huse (2004) Gabrielsson (2005;

Gabrielsson and Diamanto (2007); organisations are committed to appointing management and executive to cope with growth and capacity expansion, and in the face of growing complexities that require professionalization in planning, monitoring, control and managing the organisation going forward. Daellenbach and McCarthy (1999) found that establishing a high degree of commitment to entrepreneurial activities will depend on the effectiveness and commitment of the board and its executive. On governing innovation process in entrepreneurial orientated organisations, Markman *et al.,* (2001) emphasized that the greater the effort an organisation invests in pioneering new initiatives, the more the complexity and information asymmetry posited between executives and stakeholders, therefore board and executives with more liberal attitudes towards change will embrace orientation characterized by exploration and exploitation of opportunities to develop innovation (Musteen, Barker III, and Baeten 2010).

2.3.5 Board involvement in decision control

The concept of decision making is dynamic, of a multi-dimensional nature across all industrial sectors, referred to as a judgment, assessment or cognitive commitment to a particular knowing (Cutting and Kouzmin 2002). Board involvement in decision controls are defined for the purpose of this study, as non-routine, resource allocation, and strategic decisions that should affect the long-term EO and performance of the organisation consistent with Judge-Jr. and Zeithaml (1982).

Different levels of decision-making processes were established by prior studies. The three phase decision-making process, as reported by Cutting and Kouzmin (2002) are; (1) the phase of experience which involves the ability to scan the environment and recognize some gaps; (2) the phase of intelligence deals with the level of individual knowledge to understand what one has experienced or identified in the first phase, and (3) the phase of cognitive judgment, evaluation and actioning a particular thinking, idea or knowing (decision). In the same way, Daft and Weick (1984) pointed out that these three phases of decision making are related to groups in terms of environmental scanning (data collection), explanation (data given meaning), and learning (action taken), which is consistent with the trinity conceptual framework postulated by Cutting and Kouzmin (2002). The cognitive conflict concept

in strategic decision-making was established by Ensley *et al.,* (2002). Scholars in behavioural science emphasized a need to investigate board effectiveness and competence to perform their responsibilities (Huse 2005; Gabrielsson 2007). Despite these reports, there is still limited knowledge on board involvement in different forms of decision-making in the organisation. This section seeks to explore the existing literature and theory on how board involvement in strategic decision making support and or dispose of management preferences for entrepreneurial creative initiatives in the organisation.

There has been mounting pressure in transition and emerging economies for board involvement to be more transparent with greater accountability, specifically in relation to strategic entrepreneurial decision control, and processes to ensure the organisations' innovative growth and sustainability (Judge-Jr. and Zeithaml 1992). Prior research has documented empirical evidence that these internal and external pressures have positioned the board and its executives to be more directly involved in strategic decision-making and controls rather than adapting and relying on management generated short and long-term strategy for the organisation. Judge-Jr. and Zeithaml (1992) recorded that board involvement in strategic decision-making and control is on the increase, and they found that board involvement in strategic decision-management has a significant positive relationship to organisational financial performance. Ibrahim *et al.,* (2007), in their report on the extent of board involvement in the decision-making process, established several other previous studies that captured major board and executive responsibility in decision-making processes. They recorded the scale of measuring board involvement in decision-making processes and in their findings, they suggest that board and executives with industry specific knowledge, experience and background are well informed and positioned to be involved in decision-making processes for better results. This is in line with Kor and Sundaramurthy (2009); and Li, Huang and Tsai (2009) who found that boards with specific industry knowledge and experience are more effective and have the competence to develop strategy that will shape the organisation entrepreneurially in both internal and external environment.

Decision-making processes should revolve around corporate board operational activities; from group knowing point to group understanding and then to focusing on

the need and value of group assessed decisions (Cutting and Kouzmin 2002). Board involvement in strategic decision-management is characterized by cognitive qualities embedded in the board and executives as a group in creating a vision, mission and values, developing corporate culture and climate, positioning in the dynamic market, setting corporate direction, reviewing and deciding key corporate resources, deciding implementation mode and process (Judge-Jr and Zeithaml 1992; Beritelli, Bieger and Laesser 2007; Ogbechie 2009; Okpara 2010; Chen, Li and Shapiro 2010; Larcker and Tayan 2011; Williams and Lee 2011).

In general, the board is the centrality by which the organisation is governed and controlled and operates at the top of the organisations governance structure giving it a consensus to influence decisions processes that shapes the orientation and direction of the organisation while creating value for stakeholders (Fiegener 2005; Gabrielsson and Diamanto 2006; Ibrahim *et al.,* 2007; Ogbechie 2009; Filatotchev and Nakajima 2010; Dover and Dierk 2010; Sulong and Nor 2010).

In contrast, other studies have suggested that to stimulate entrepreneurial projects and eliminate directors impunity with conflicts of interest, managers should be involved in the process of initiating and implementing corporate strategic decisions and the board should be involved in ratification and monitoring the processes of decision-making, implementation and performance of the decisions and strategies set for growth (Fama and Jensen 1983; Gillan 2006; Gabrielsson and Diamanto 2006; Gabrielsson 2007; Dey 2008; Mwenja and Lewis 2009; Allcock and Filatotchev 2010). Robeson and O'Connor (2007) in their longitudinal study on governance of innovation in large established companies, found that none of the theoretical frameworks they proposed, adequately described the challenges faced by the organisations as they develop and get involved in strategic decision-making processes to oversee risk management, uncertainty in innovative venturing and the taking of decisive competitive advantage by acting proactively to be ahead of the rivals.

2.4 Links between EO and CGS

According to Daily and Dalton (1992), theories of business literature suggests strong linkages between CGS and entrepreneurial activities within the organisation. In the same way, practitioners, business researchers and scholars have continued to pay more attention to the role of boards and executives in entrepreneurial initiatives in the organisation. For example, Barringer and Bluedorn (1999) reported that:
"Entrepreneurial attitude and behaviours are necessary for organisations of all sizes to grow and be sustainable" (Barringer and Bludorn 1999: 421).

However, there is limited empirical evidence on how this relationship influences and impacts on management support and, or disposition for corporate EO. This section will explore prior research and theory to establish existing knowledge on the linkages between EO and CGS.

The fast industrial revolution, consistent increase in demand for quality goods and better services, the advent of innovation and emerging technological know-how, (Gabrielsson 2007), and the rate at which existing products and services are made obsolete have resulted in poor market profitability and performance, (Poon, Ainuddin and Junit 2006), aggressive competitiveness as foreign organisations expand their territories and intensify their capacity. This is done through new market and product development (Henderson and Cool 2003; Urban 2008), where challenges face many organisations in today's business environment. It takes an entrepreneurially-oriented organisation to survive in the face of these challenges by having a strong appetite for risk-taking, venturing, consistent and effective commitment to technological advancement, product and service innovation, with extensive ability to be a proactive competitive oriented organisation (Covin and Slevin 1991; Zahra and Covin 1995; Huse, Neubaum and Gabrielsson 2005; Avlonitis and Salavou 2007; Chang *et al.,* 2007; Keh *et al.,* 2007; Naldi *et al.,* 2007; Frishammar and Horte 2007; Kropp *et al.,* 2008; Perez-Luno *et al.,* 2010; Javalgi and Todd 2010).

Secondly, drawing from the prior studies, an entrepreneurially oriented organisation has the ability and drive to develop strong management and effective governance

systems This will allow a combination of resources (Guth and Ginsberg 1990; Kor 2003; Kor and Sundaramurthy 2009) to encourage learning, experimentation and adaptation of tested ideas for product and service development (Robeson and O'Connor 2007). Such corporate governance systems deal with organisational issues relating to compliance of the organisations' core competence and strategies like culture (Cutting and Kouzmin 2002; Engelen 2010), 'Best Practice' business ethics (Arjoon 2005; West 2006), regulatory issues (Gillan 2006; SAICA 2009; IOD 2009), and leadership (Dover and Dierk 2010) A well-structured board and executives with strong potential to eliminate directors impunity with conflicts of interest (Ensley *et al.,* 2002; Altinay and Altinay 2004; Jogaratnam *et al.,* 2006; Green *et al.,* 2008), competent, knowledgeable, skilful board and executives effectively involved in the decision-making processes and committed to achieving the organisations' goals (O'Connor and Ayers 2005; Ibrahim *et al.,* 2007; Lau *et al.,* 2009; Williams and Lee 2009; Li *et al.,* 2009; Diochon 2010).

The EO concept originates from the conceptual theory of corporate entrepreneurship. This theory, established by Guth and Ginsberg (1990), declared that the study of corporate entrepreneurship has tended to focus on internal innovation and venturing. On a broader perspective, that involves creation of new wealth through a combination of resources including actions such as refocusing a business competitively, making major changes in marketing, redistribution, redirecting product development and reshaping operations using resourceful human capital that direct and monitors the decision-making processes and implementations (Kor 2003; Brown and Caylor 2006; Kor and Sundaramurthy 2009).

Other stream of studies suggests a strong link between EO and CGS. For instance, Gabrielsson (2007), recorded that an active board and executives can have a strong influence on the organisations value-creation ability through their commitment to take an entrepreneurial posture. Drew *et al.,* (2006), through the development of five elements of corporate governance, manages strategic risk, identifies an integrated approach to manage corporate risk, which enhances board and executives' approach and competence to handle complexities of risk in meeting strategic organisational goals. Business research and studies have shown evidence on board and executive support for entrepreneurial activities, as a strategy for goal

achievement. For instance, Voss *et al.,* (2005) seeks to integrate stakeholders' theory with the EO to explore distinct relationships and documents that different stakeholders including shareholders, board and executives support EO in unique and sometimes unexpected ways.

According to Diochon (2010), organisations who are effective and efficient in setting strategic goals and championing novel initiatives have a higher level of entrepreneurial intensity through board and executive encouragement than those organisations that adopt an attitude of 'wait and see' posture. Both board and executives, by assuming the role of change agent in the organisation, pulling together human and social capital resources, can leverage on individual board knowledge, experience and skill resource (Williams and Lee 2009), contributions that will bring about entrepreneurial attitude to shape the organisation going forward.

In linking EO to the knowledge network of multi-national boards and executives, Williams and Lee (2009) identified that board knowledge and experience network is an important perspective in EO, and should the board and executives attempt aggressive capacity investment with proper coordination, monitoring and control, they may run the risk of not adequately exploiting new opportunities which will result in low industry growth. This argument is consistent with Wu (2008) who investigated board and executives risk-taking as a lens to explore organisations' innovativeness, thus finding that effective internal governance shapes the performance of new product introduction in entrepreneurial firms. In the same way, linking organisations strategic decision-making style and control to innovation, risky venturing and propensity to be ahead of competitors, Green *et al.,* (2008) found that the board and executives decision-making style and control impact and have a positive influence on organisations' entrepreneurial activities and relationships. In contrast, Hung and Mondejar (2005), recorded in their findings on corporate directors and entrepreneurial innovation that there is no correlation between board and risk-taking unless there is a significant positive correlation between directors' share ownership and risk-taking then the board will positively relates to entrepreneurial development of new initiatives. This argument was supported by Gabrielsson (2007), in his view that most boards and executive members tend to avoid reputational damage in the business environment, and does not support or incentivise entrepreneurial risk-

taking and venturing particularly on new untested projects that are highly risky and posited as an uncertain return on investment.

Organizational strategy, governance structure and decision making processes are linked to the core competence as well as the EO and culture within the organisation (Miller and Toulouse 1986), and the need for achievement and locus of control is analyzed and linked to EO such as innovation (Hung and Mondejar 2005; Gabrielsson and Diamanto 2007; Wu 2008); risk-taking and management (Zahra 1996; Lumpkin and Dess 2005; Drew *et al.,* 2006); ability to act proactively to gain competitive advantages (Chang *et al.,* 2007; Casillas *et al.,* 2010; Perez-Luno *et al.*, 2010); substantial delegation (Barringer and Bluedorn 1999; Lyon, Lumpkin and Dess 2000; Dover and Dierk 2010); limited board and executive professionalization (Williams and Lee 2009; Allcock and Filatotchev 2010) and a high level of performance (Altinay and Altinay 2004; Clercg, Dimov and Thongpapani 2010). However, irrespective of the expanded literature on the relationships between EO and Corporate Governance, there are still arguments on the basis of mixed and inconclusive findings over how best to conceptualise these relationships.

2.5 Conclusion

In the assessment of CGS, four variables that underlie an organisation's ability to be entrepreneurially oriented are consistently mentioned in several studies. These variables are: (1) Board and executive's effectiveness (Diochon 2010) and competence in making strategic entrepreneurial decisions that will shape the organisations innovative ability, risk management capabilities and position the organisation to know when to act proactively in taking market and competitive advantages (Miller and Toulouse 1986; Gillan 2006; Walker 2007; Windsor 2009; Okpara 2010; Hu *et al.,* 2010). (2) Board knowledge and experience in industry specific trends on market and technologies, ethical and regulatory issues, internal and external environment, development and introduction of new products and services in the market place (Ensley *et al.,* 2002; Kor 2003; Dover and Dierk 2010; Larcker and Tayan 2011). (3) Board and executives commitment to innovation, risk management and their ability to act ahead of competitors, recognition of

management and industrial complexities that support creative and novel ideas within the organisation (Fama and Jensen 1983; Cutting and Kouzmin 2002; Brickley and Zimmerman 2010; Musteen, Barker and Baeten 2010). (4) Board and executive involvement in the entrepreneurial decision-making processes and control - decision of investing in new technology, capacity expansion, to be industrial pioneers, innovative, dynamic in administration and operations ahead of rivals (Judge-Jr and Zeithaml 1982; Daft and Weick 1984; Zahra 1996; Cutting and Kouzmin 2002; Huse 2005; Gabrielsson 2007; Ibrahim *et al.,* 2007; Ogbechie 2009; Filatotchev and Nakajima 2010).

Entrepreneurial projects are sometimes very risky, failure rates are increasingly recorded and many creative initiatives and novel ideas never become successful even when tested and tried (Crawford 1987; Gabrielsson 2007). On the other hand, organisations acting proactively to take advantage of the industry 'first mover' status seem to ignore the possibility of the competitors adopting a pre-emption strategy or reactiveness to maintain their market share (Henderson and Cool 2003). For an entrepreneurial project to be profitable, organisations should have an entrepreneurial culture that promotes corporate EO and spirit across all levels (Cutting and Kouzmin 2002; West 2006; Engelen 2010). One of the greatest challenges faced by organisations in today's business environment is the ability to remain competitive ahead of rivals through innovation, technological and capacity advancement, risk-taking appetite, and extensive ability to know when to act proactively in product, market and service development (Covin and Slevin 1991; Zahra and Covin 1995; Huse, Neubaum and Gabrielsson 2005; Frishammar and Horte 2007). In this view therefore, it becomes imperative for organisations to direct attention to address these challenges which could be achieved through effective governance systems with well-structured board and executives that direct attention towards the exploration of new business opportunities that will sustain, or even enhance, the long-term competitive position (Gabrielsson 2007; Avlonitis and Salavou 2007; Chang *et al* 2007; Keh *et al.,* 2007; Naldi *et al.,* 2007; Kropp *et al.,* 2008; Perez-Luno *et al.,* 2010; Javalgi and Todd 2010).

However, irrespective of the vast evidence that effective, competent, knowledgeable and committed boards and executives can influence and shape the direction and

performance of an organisation, there are still arguments on the basis of mixed and inconclusive findings, over how best to conceptualise the relationships between the EO dimensions (i.e. innovation, risk-taking and proactiveness), and the corporate governance dimension on board and directors effectiveness and competence, knowledge and experiences, commitment and recognition of complexities, and involvement in decision-making processes and control.

This, therefore raises the basic question firstly, is there any link between EO and CGS? Secondly, how does governance structure, if present, impact on and influence EO that supports management preferences for innovation, risky venturing and acting proactively in introducing new product and services?

To address this problem, this study draws on prior theory and research to establish existing empirical evidence on the links between the concepts of EO and CGS.

3 RESEARCH METHODOLOGY

3.1 Research method

This study is a quantitative descriptive research study with primary data sources. The context of the study is the South African oil and gas industry. In this industry, it has been identified that there is little or no research that examines the association between CGS and EO. This is therefore a gap in knowledge. The purpose of the study is to address the problem by filling the identified knowledge gap by testing hypotheses on the relations between the constructs and their dimensions through statistical analysis of primary data. Using descriptive and inferential statistical methodology, an actual determination of the links between the four theoretical dimensions of CGS and the three theoretical dimensions of EO, will be made. Specifically, the independent variables of board effectiveness and competence, knowledge and experience, commitment and recognition of complexities, and involvement in strategic decision – making processes and controls related or linked to the dependent variables of EO – innovation, risk-taking apatite, and the extensive

ability that the board and executive has to act proactively when faced with challenges.

3.2 Research design

This section focuses on the research plan clarifying the methods and processes adopted in data collection and analysis. A research design involving web-based self-reporting survey instrument, which included the Board Self- Assessment Questionnaire (BSAQ) sent to the board, executives and decision-makers in the oil and gas industry in South Africa.

Several prior research studies have recorded various means for collecting direct data from boards and executives including personal interviews, telephone interviews, web-based and online mailed surveys (Cycyota and Harrison 2006). In as much as the web-based online mailed survey has received varied criticisms on its genuineness for assessing organisational-level data, it has also been identified as having numerous advantages in terms of structuring questions with the potential of gathering highly quantifiable answers, reaching the target destination faster at a lower cost and with the protection of the confidentiality of the respondent (Zikmund 2003; Cycyota and Harrison 2006).

The survey tool used to distribute the questionnaire was a web-based survey using Surveymonkey, which was selected principally because of its functionality and more importantly it was considered very suitable for the target population of key company decision-makers who are likely to use online resources regularly.

3.3 Questionnaire design

The research survey design was a self-reporting online questionnaire consisting of three sections. Proper care was taken to ensure clarity in terminology and to ensure that the items of the questionnaire addressed the research question.
Section A consists of demographical information of the respondents and their companies, including variables such as name of company, respondent's current

position, and number of years in current position, company size, board size and composition.

Section B, part 1, consists of questions designed to reflect the theoretical dimensions of CGS (CGS) and thus form the independent variables which measure board and executive effectiveness, knowledge, commitment and involvement in decision-making processes. Part 2, 3 and 4 consist of 35 items that seek to identify the level of board and executive's industry specific knowledge and experiences, the extent of board and executive commitment in monitoring entrepreneurial risky-venturing and involvement in entrepreneurial decision-making processes, and the implementation of core strategies for organisations' value-creation. In this study, board effectiveness is measured on the priority organisations give to entrepreneurial activities, long term entrepreneurial goals, and their ability to generate several creative and tested approaches through research and development. Knowledge and experience measures board expertise, industry knowledge and board experience in setting entrepreneurial strategies within the organisation. Board commitment and complexity elements measures the board's ability to follow trends in both the internal and external environment within the industry; and their commitment to meeting regularly in order to review and encourage management to implement entrepreneurial activities. Board involvement in decision control measures board preferences in resource allocation, strategic decisions, changes in organisations' and regulatory policies and decisions relating to entrepreneurial opportunities.

Section C specifically focuses on EO dimensions – innovation, risk-taking and proactiveness. The questions in this section seek to identify how boards' and executives' relate to management preferences for risky-venturing, creative innovation and ability to act proactively ahead of other competitors in the industry.
In this section, proactiveness is measured by the board and executives' creative method of operation ahead of their rivals, introduction of new products, capacity expansion ahead of competitors and seeking opportunities to be industry first mover. Innovation on the other hand, measures the board and executives' intentions to encourage and stimulate product-market and technological innovation, experimentations, creative initiatives and novel ideas, systems and process development, and long term commitment to invest on new technology that enhances

EO. Risk-taking measures the board and executives' commitment of resources to promote new and risk-venturing, exploring business environment and making risky decisions, adapting competitive risk position, personal risk taking and wide ranging acts to achieve organisations entrepreneurial objective.

An additional question was added based on the personal interview to verify board perceptions of environmental dynamism in which they operate but was dropped as this study focuses on assessing the relationships between EO and CGS constructs and responses to this question were not analysed.

All questions excluding those of section A were based on a 7-point Likert-type scale ranging from '1' 'strongly 'disagree' to '7' 'strongly agree'. The questions in the different sections on the two constructs: EO and CGS were designed specifically to address the research question.

3.4 Population and sampling

3.4.1 Target population

The current study targeted decision makers in the South African oil and gas industry. The target population consisted of 425 boards and senior decision-makers across the industry ranging from executive and non-executive directors, CEOs, company secretaries, and the top management team. According to Cycyota and Harrison (2006), leaders of organisation are in a better position to provide opinions and valuable data and information needed to understand the organisation that they lead since they are more knowledgeable in the organisational settings and processes.

3.4.2 Unit of analysis

The unit of analysis is key decision makers of companies in the South African oil and gas industry, as the data was sourced across decision-makers serving various organisations within the industry and subsequently analysed with particular attention

to the diversity of board and executives representing organisations of various size, age, composition and operating environments.

3.4.3 Literature review and sampling

An expansive literature review was conducted for this study. Careful selections were made in the search of related topics and conceptual theory to ensure appropriateness. The sampling frame of this research comprised 2013 boards, executives and senior decision-makers representing a broad cross-section of the oil and gas industry in South Africa. In selecting the target population, foreign organisations operating in the industry with no board or executive presence in South Africa were excluded and furthermore, all retail companies in the industry were excluded. Selection criteria after exclusion led to a final sampling frame of 425 board, executives and senior decision makers representing 109 organisations in the South African oil and gas industry. This process is in line with prior studies for example, Barringer and Bluedorn (1999) and Barreira (2004).

A total of 173 boards, executives and senior decision-makers from companies across the oil and gas industry in South Africa responded representing a response rate of 40.71 per cent. This response is substantial and consistent with a response rate obtained in similar international studies documented in literature, for example 27.6 per cent (Zahra 1996), 42 per cent (Voss *et al.,* 2005), 30 per cent (Gabrielsson and Diamanto 2007), 28.3 per cent (Ogbechie 2009).

A pilot test was used in the form of a pre-test administered to five board members representing different companies, and two academies. Their responses indicated that only few changes needed to be made, specifically in the demographic part of survey questionnaire, thus, clarifying the significance of piloting a survey (DeMaio, Bates, Willimack and Ingold 2006).

Thus, the objective was to use boards, executives and decision-makers with exclusion of the retail companies in the industry thus, strengthening the sample characteristics on the assumption that the literature review on related topics had explicitly compared and cleared all the critical problems relating to sampling validity,

reliability, design and techniques (Miller 1991; Zahra 1996; Voss *et al.,* 2005; Gabrielsson 2007; Diochon 2010; Ogbechie 2010).

3.5 Data collection

Data was collected by means of an on-line mail survey questionnaire to boards, executives and senior decision-makers in the South African oil and gas industry. My selection criteria after exclusion led to a final sampling frame of 425 board, executives and senior decision makers representing 109 organisations in the South African oil and gas industry. These organisations were derived from data collected from IBM (International Business Monitor) specialist publishers who maintain a business information database on global emerging markets for senior executives in more than 125 countries worldwide; however, the current study is focused on South Africa thus, the 425 sampling frame is derived from the South African oil and gas industry; South Africa Oil and Gas Alliance (SAOGA), and Vibrant Media who maintains a decision-makers database in industries across South Africa. A personalised letter accompanied each questionnaire, explaining the aim and objectives of the research and assuring the respondent of the confidentiality of the responses in line with prior studies for example, (Cycyota and Harrison 2006).

3.6 Data analysis

The data analysis was conducted using descriptive and inferential statistics in accordance with the relevant assumptions to describe the primary data and test the hypothesis to answer the research question. All data analysis was conducted using STATISTICA (data analysis software system), version 10.

At the outset, the demographic profiles of the respondents and their companies were described using frequency distributions and corresponding graphs, followed by an examination of the psychometric properties of scales used in the questionnaire. This section involved examining measures of central tendency (the mean and median values, variability), the standard deviation, range, and distribution shape (skewness and frequency distributions), and internal consistency reliability (Cronbach's Alpha).

Transformations of the score distributions were computed in an attempt (though unsuccessful) to transform the negatively skewed score distribution into normally distributed scale scores. Three tests of Normality were conducted: Kolmogorov-Smirnov (K-S), Lilliefors and Shapiro-Wilks.

The second section presented the tests of the hypotheses, beginning with an examination of the bivariate correlations and corresponding scatter plots between the scale scores reflecting the dimensions of the CGS and EO constructs. Following these univariate analyses, multivariate analyses of the correlations between the two sets of variables were computed. These analyses, involved using firstly the techniques of canonical correlation between the two sets of variables, and secondly, factor analysis.

Both techniques effectively summarise the multiple measures into variates or linear combinations of variables with weighting optimised to extract maximum variance from the original measures. Both techniques compute latent roots or eigenvalue for the underlying dimensions of a set of scores, representing the amount of variance of the scores accounted for by the root or factor (Hair, Black, Babin and Anderson 2010). Both techniques independently revealed a single dimension underlying the four CGS scales, and a single dimension underlying the three EO scales, with canonical analysis arriving at a factor structure for latent roots, and factor analysis at arriving at a factor structure for the underlying factors.

Moreover, the results derived from both canonical analysis and factor analysis reflected highly positive and significant correlations between the CGS and EO variables.

3.7 Data validity and reliability

Prior research studies and theory were reviewed that assessed the construct validity and reliability of measurement scales of CGS and EO. Validity in this context refers to the processes of examining logics derived from the measure of concepts of interest that recognise the extent to which a measure distinctively represents the

concept (Cronbach 1971; Short, Brogberg, Cogliser and Brigham 2010). On this basis therefore, the importance of rigor in measuring the constructs cannot be overlooked.

3.8 Research methodology limitations

According to Cycyota and Harrison (2006), for researchers seeking information, the organisation's decision-makers might be the only source for some valid information however; the preparedness of these executives to share such evidence with the researcher is another matter. Several studies have reiterated that the difficulty in gaining access and attention to the boards, executives and senior decision-makers, which have in turn limited the number of academic and business research studies evaluating boards, executives and senior decision-makers (Pollio and Uchida 1999; Siciliano 2005; Gabrielsson 2007; Ogbechie 2009).

The South African oil and gas industry is still in a transition stage and there is the possibility of executives serving on multiple boards which invariably could have resulted in sample selection error. However, the occurrence of this type of error was limited by the nature of control and e-mail selection criteria inherent in the online survey used to administer the questionnaire, which allowed only one send and one response per respondent. It is known that the members of the target population have tight daily schedules which may have also contributed to lower than expected responses.

4 PRESENTATION OF RESULTS AND ANALYSIS

4.1 Introduction

The primary focus of this study was to determine the relationship between the constructs of EO and CGS, by assessing the extent to which one set of variables (IV) correlates and can predict another set of variables (DV). The companies in the final sample represented a broad cross-section of the oil and gas industry in South Africa. The analysis of the responses was conducted in two parts. The first part focused on

descriptive statistics analyses and the second part focused on addressing the research questions. This was done by examining the correlations between the test variables at both the one-dimensional and the multidimensional levels, in order to determine the strength of the relationships.

In the first part of this section, a description of the sample of company respondents is presented. This is followed by an analysis of the psychometric properties of the scales in terms of central tendency, variability and skewness. Thereafter the scales' internal consistency reliabilities are presented as confirmation of the evidence, presented in chapter three, that the reliability and validity of all the instruments used in this study have already been tested critically by several prior studies and considered to be satisfactory.

The second part of this section attempts to answer the research questions through testing the hypotheses. The hypotheses posit firstly, that there is a positive relation between each dimension of CGS and EO, i.e. testing whether there are relations at the univariate level of analysis, and secondly, whether there is a positive relation between the multivariate constructs of CGS and EO. To this end the canonical correlation analysis was chosen as the statistical tool for analysing the multivariate relationships between EO and CGS and its dimensions; as both the constructs of CGS and EO are shown by relevant literature to be multidimensional. The relationships between these two sets of variables were examined using STATISTICA software version 10 (StatSoft 2011).

Finally, in view of the strongly positive correlations between the EO scale scores and the concern about multicollinearity in the data, factor scores are calculated for each set of scores (the set of four CGS scores and the set of three EO scores) as an alternate data reduction technique. These factor scores are subsequently correlated to validate the canonical correlation.

4.2 The unit of analysis and the measurement scales

4.2.1 Unit of analysis

In this study, the unit of analysis was considered to be the companies in the South African oil and gas industry. The following variables were measured for each respondent: gender, race, and position in the company. Furthermore, the following company-related variables were measured by the questionnaire: enterprise, years in business, principle line of business, number of employees, board size and board composition.

Descriptions of these respondents and company-related variables are presented in the form of frequency tables and corresponding graphs.

Table 1: Profile of the respondents to the survey

Male	88	74.6%
Female	30	25.4%
Total	118	100%

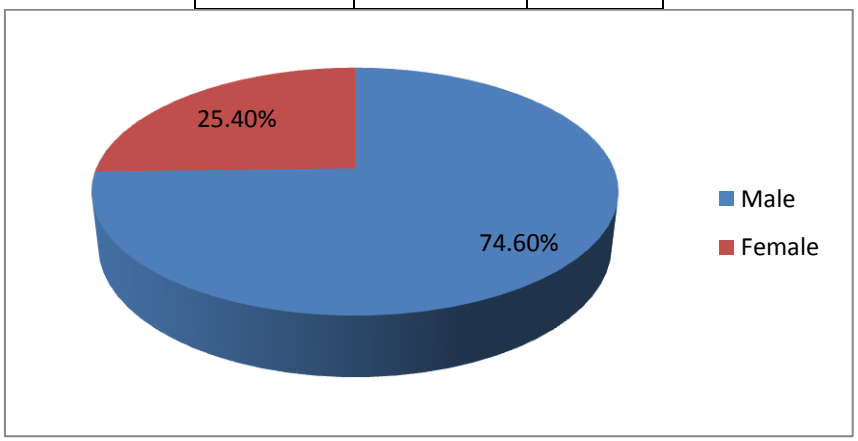


Figure 2: Profile of the respondents to the survey

Table 2: Profile of the respondents' positions

Respondents Position		
	Response Count	**Response per cent**
CEO	12	10.1%
Executive Director	26	21.8%
Non-Executive Director	7	5.9%
Company Secretary	3	2.5%
Top Manager	27	22.7%
Middle Manager	32	26.9%
Others	12	10.1%
	119	**100%**

Table 3: Profile of the respondents' companies

Principal Line of Business	**Response Count**	**Response per cent**
Gas	13	11.9%
Petrochemical	17	15.6%
Refining	17	15.6%
Construction/Pipeline	7	6.4%
Logistics	8	7.3%
Trading/Marketing	14	12.8%
Exploration	19	17.4%
Engineering/ITC	14	12.8%
Total Responses	**109**	**100%**

Table 4: Profile of the respondents' company board size

Board Size		
Categories	**Response Count**	**Response per cent**
0-5	42	38.2%
6-10	31	28.2%
11-15	28	25.5%
16-20	6	5.5%
over 20	3	2.7%
	110	**100%**

Table 5: Profile of the respondents' company board composition

Number of Outside Directors		
Categories	**Response Count**	**Response per cent**
0-5	75	67.0%
6-10	32	28.6%
11-15	4	3.6%
16-20	0	0.0%
over 20	1	0.9%
Total Responses	**112**	**100%**

4.2.2 Psychometric properties of the measurement scales

In this study, the construct of CGS was considered as the independent variable and the construct of EO is considered as the dependent variable. As both constructs are theoretically multidimensional, their analysis will be considered at both univariate and multivariate levels. At the outset however, it is necessary to present the psychometric properties of central tendency, variability, skewness, and internal consistency for each measure of the dimensions of CGS and EO.

Table 6: Psychometric properties of central tendency (n=118)

Constructs	Dimensions	Valid N	Mean	Median	Minimum	Maximum	Std Dev	Skewness
CGS	Board effectiveness	118	5.27	5.11	2.11	7.00	1.13	-0.43
	Knowledge	115	5.80	6.11	1.00	7.00	1.22	-1.76
	Commitment	113	5.79	6.08	2.08	7.00	0.99	-1.81
	Involvement	113	5.28	5.50	2.36	6.43	0.72	-2.11
EO	Innovation	117	5.78	6.11	1.44	7.00	1.07	-2.06
	Proactiveness	117	5.69	6.09	1.73	7.00	1.15	-1.92
	Risk taking	117	5.06	5.33	1.33	6.33	0.84	-2.26

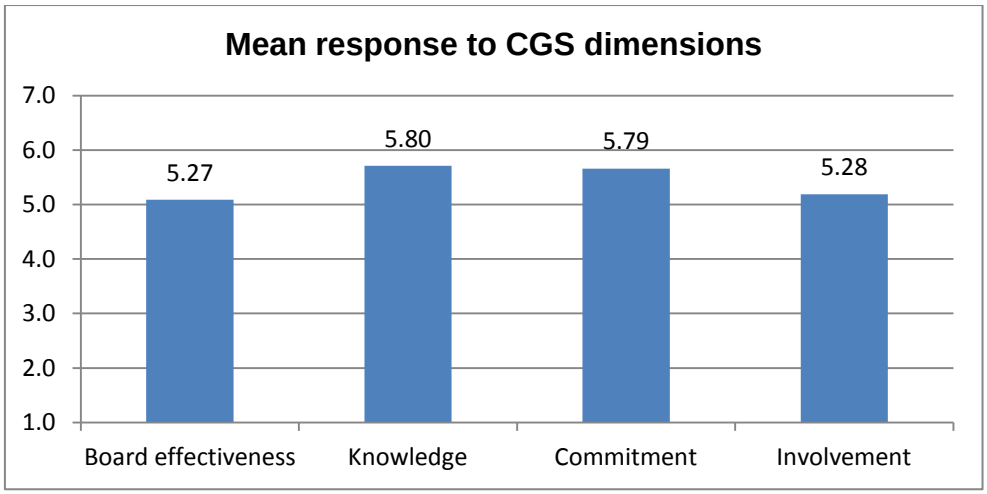


Figure 3: Mean response to CGS dimensions

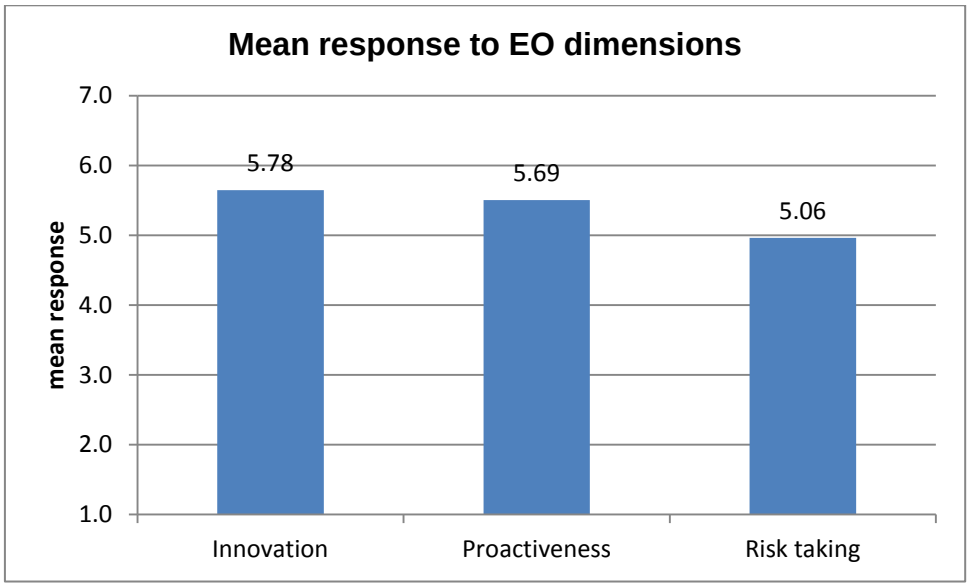


Figure 4: Mean response to EO dimensions

The summary statistics presented in Table 6 show that the values of the means and medians of all the scales are at least 5. Relative to the seven-point Likert scale, these means are high as the scale midpoint of neutral is four. Thus the responses to these scales are generally positive or very positive, an observation consistent with the negative skewness of the scales. As negative skewness presents some concern for the adherence to the assumptions of Normality of the scales, scores frequency distributions and tests of Normality are presented in Figures 5 and 6 for the four scales of CGS and the three scales of EO respectively.

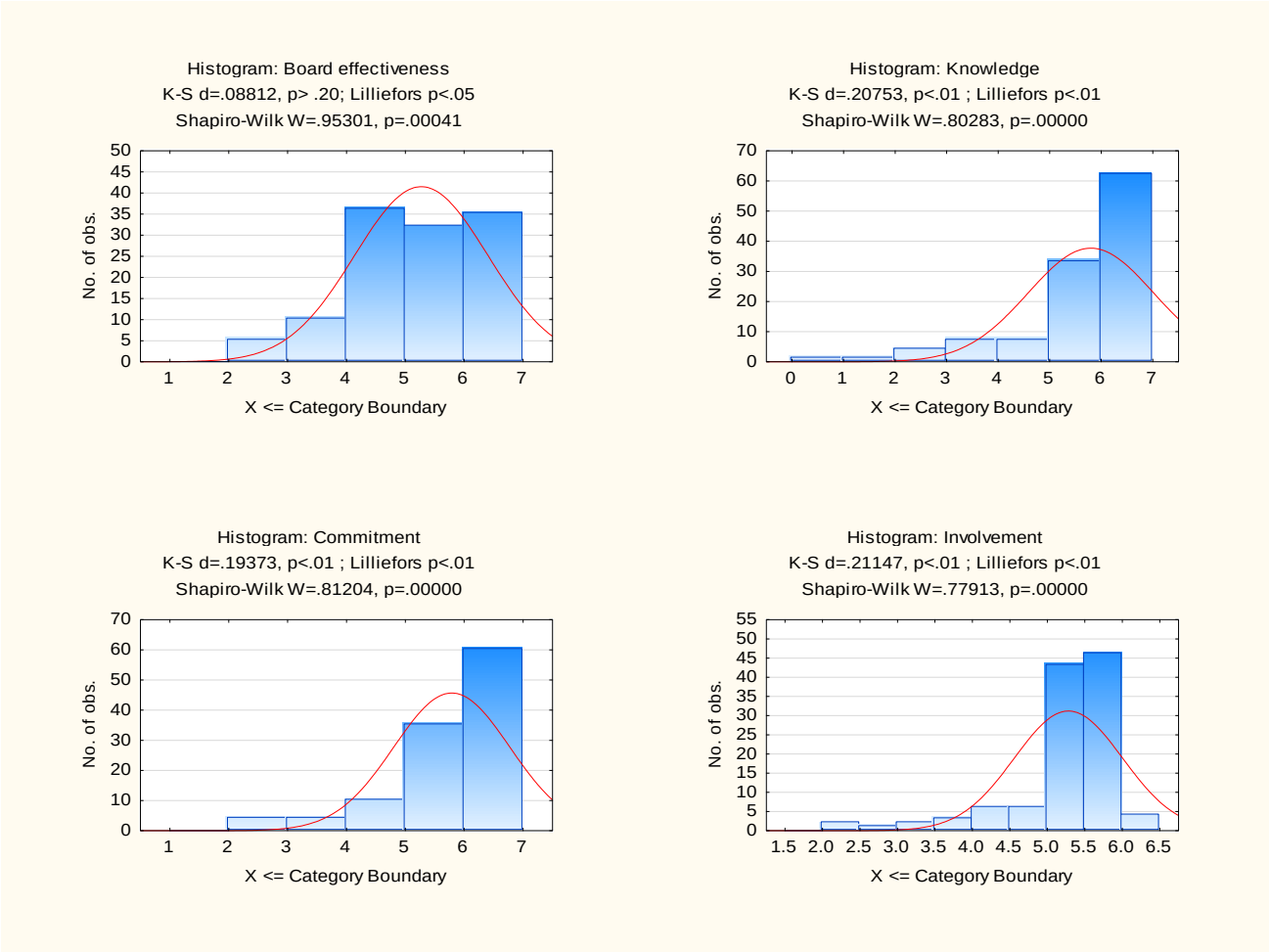


Figure 5: Frequency distributions and tests of Normality of the four scales of CGS

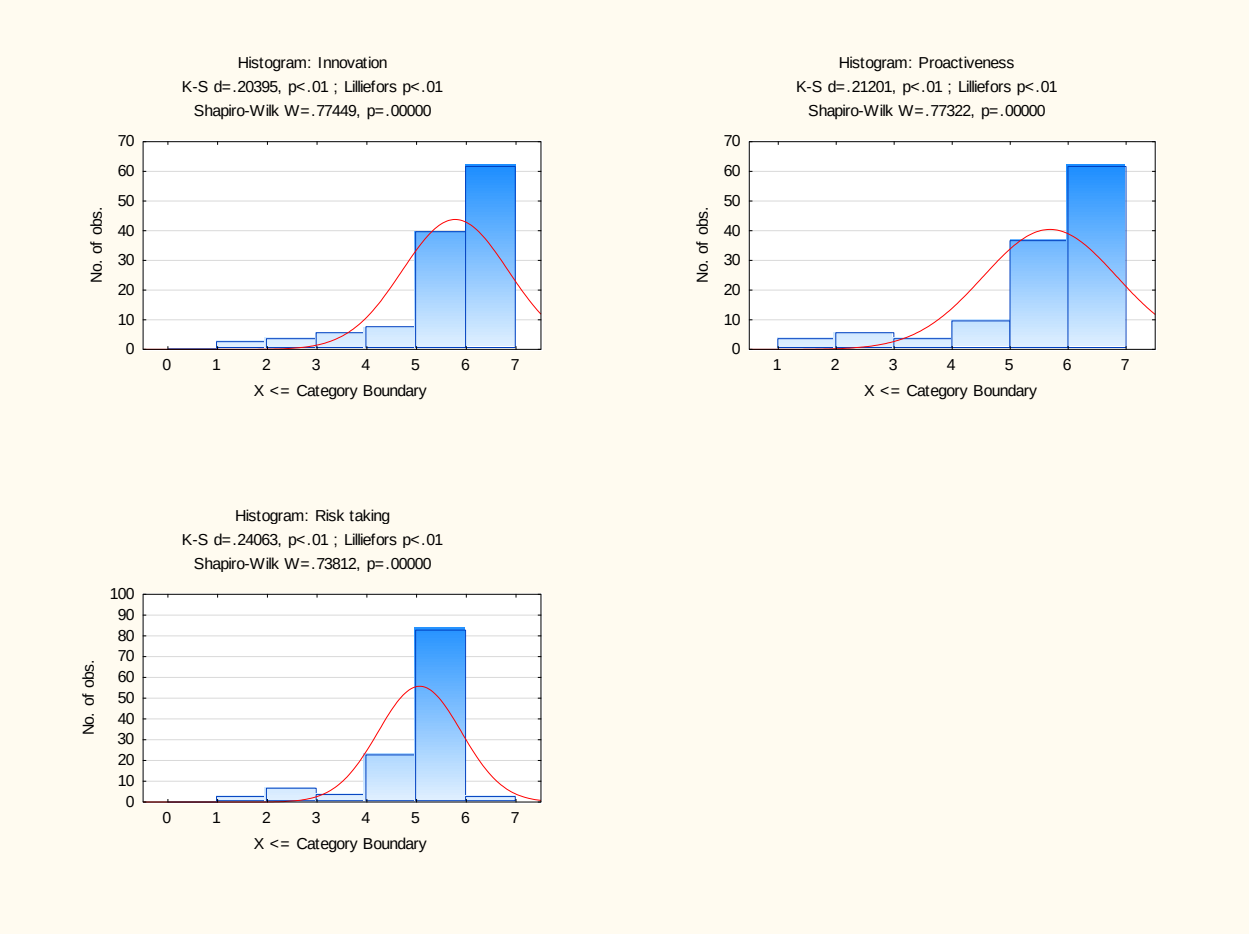


Figure 6: Frequency distributions and tests for Normality of the three scales of EO

The three tests of Normality considered are Kolmogorov-Smirnov (K-S), Lilliefors and Shapiro-Wilks. Normality of the score distributions would be shown if these tests were non-significant ($p>0.05$). However, in the cases of the distributions of the four scales of CGS (Figure 5) and the three scales of EO (Figure 6), the tests of Normality are significant ($p<0.001$).

In an attempt to correct for the non-normality of the score distributions, the transformations of the square and cube functions were considered in line with Tukey's ladder of transformations. The corresponding frequency distributions and tests of Normality are presented in Appendices 1 and 2 for the four scales of CGS and the three scales of EO respectively. However, the distributions of the transformed scales remain non-normal as shown by the significant tests of Normality. Canonical correlation analysis can accommodate non-normal variables if the distributional form (e.g., highly skewed) does not decrease the correlation with

other variables (Hair *et al.,* 2010), and thus the transformed scales were not considered further in the analysis.

Internal consistency reliability coefficients, as measured by Cronbach's coefficient are presented in Table 7. As the numbers of items in each scale differ, the average inter-item correlations are also presented for each scale as scales with larger numbers of items, even with the same degree of item inter-correlations, have higher reliability. (Hair *et al.,* 2006:137). For all scales, the average inter-item correlation, are considered satisfactory to high (r=0.33 – 0.76). Internal consistency and reliability of measure were acceptable as coefficient alpha exceeds 0.70 levels, and is consistent with prior studies.

Table 7: Cronbach alpha reliability analysis

CGS & EO Dimensions	Cronbach alpha	Average inter-item correlation
Board effectiveness	0.84	0.45
Knowledge	0.93	0.65
Commitment	0.90	0.54
Involvement	0.81	0.35
Innovation	0.89	0.59
Proactiveness	0.74	0.33
Risk taking	0.94	0.76

4.3 Tests of hypotheses

In order to answer the research questions of the study, two hypotheses were framed. They are now restated for convenience:

H1: Each of the dimensions of CGS is positively correlated with each of the dimensions of EO.

H2: The composite measure of CGS is positively correlated with the composite measure of EO.

Hypotheses 1 and 2 are tested at the univariate and multivariate levels in sections 4.3.1 and 4.3.2 respectively.

4.3.1 Test of Hypothesis 1

The Pearson product moment correlations between each of the scales of CGS and each of the scales of EO are presented in Table 8. All 12 of these bivariate correlations are highly significant ($p < 0.001$), and the linear relations are evident from the scatter plots. Although there is a preponderance of observations in the top right corner of each scatter plot, these points are not considered to be extreme values or outliers and thus are not considered to have created a spurious correlation as the overall direction of the relation in each case is generally consistent for points across the entire range of each scale.

It is interesting to observe that although all the CGS scales are highly correlated with the EO scales, the knowledge and commitment scales, compared with the board effectiveness and involvement scales, are even more highly correlated with the scales of EO.

Table 8: Pearson moment correlation between each of CGS and EO scales

	Innovation	Proactiveness	Risk taking
Board effectiveness	0.61	0.61	0.57
Knowledge	0.79	0.82	0.76
Commitment	0.81	0.77	0.70
Involvement	0.64	0.62	0.58

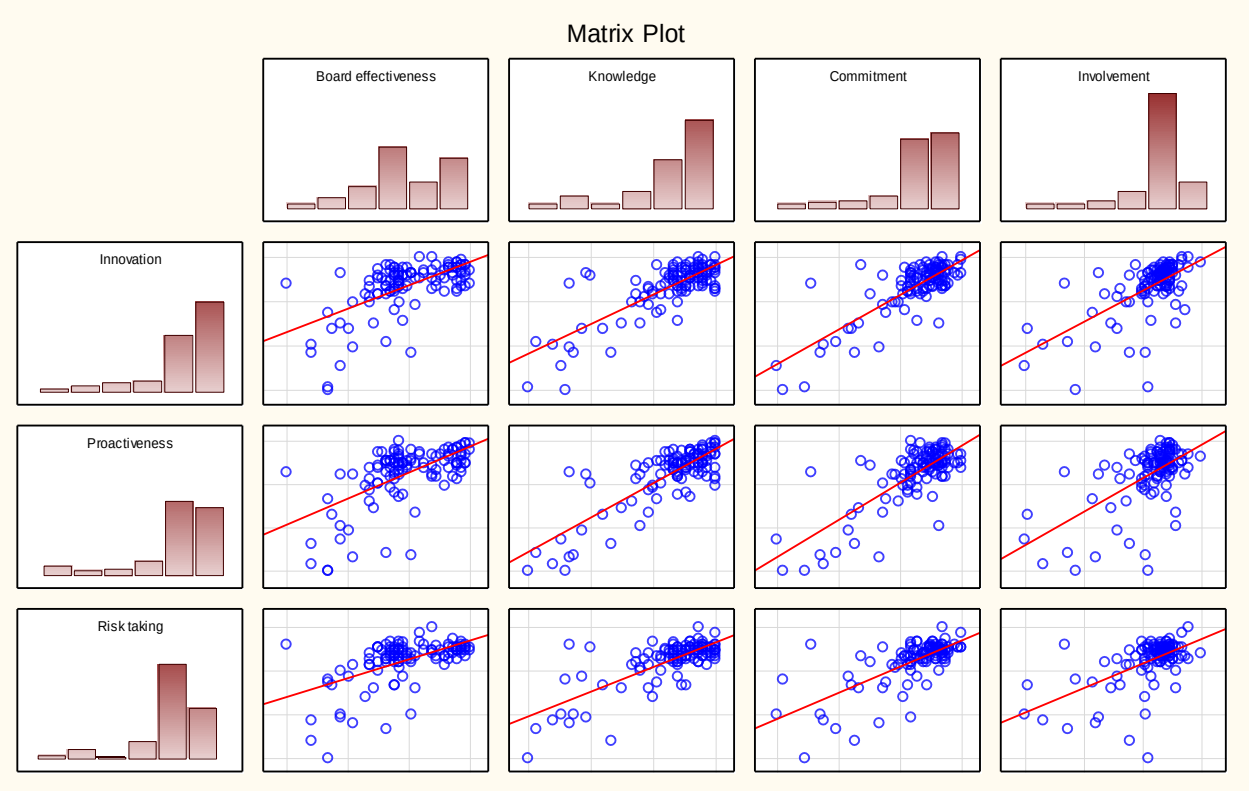


Figure 7: Scatter plots for linear relations between CGS and EO scales

Based on the correlations of the dimensions of CGS and EO, there is support for the relations between CGS and EO at the univariate level. Thus Hypothesis 1 is supported.

4.3.2 Test of Hypothesis 2

In view of the theoretically multivariate nature of both CGS and EO, the multivariate correlation technique of canonical correlation was selected to calculate the correlation between the two sets of measures. Canonical correlation analysis is viewed as a logical extension of multiple regressions as the latter involves a single dependent variable (Hair *et al.,* 2006). The objective of the canonical analysis was to correlate simultaneously the four measures of CGS with the three measures of EO. This is achieved via the construction of an optimally weighted linear combination of the four measures of CGS and a second optimally weighted linear combination of the three measures of EO in a manner that maximises the correlations between the two sets of variable. According to Hair *et al.,* (2010), canonical correlation analysis can accommodate any metric variable without a strict assumption of normality, although normality is desirable as it allows for the highest correlation among variables. Thus,

although normality was not obtained for the variables in the present study, the canonical correlation analysis was pursued.

Various summary statistics are produced in the canonical correlation analysis: Firstly, canonical R is the overall multivariate correlation between the two sets of variables; specifically for the first and most significant canonical root (Figure 8). Although the analysis extracts three canonical roots in the present study, only the first of these was significant, based on only one significant chi-square value for the roots ($\chi 2$ (12) =152.0744, $p<0.001$).

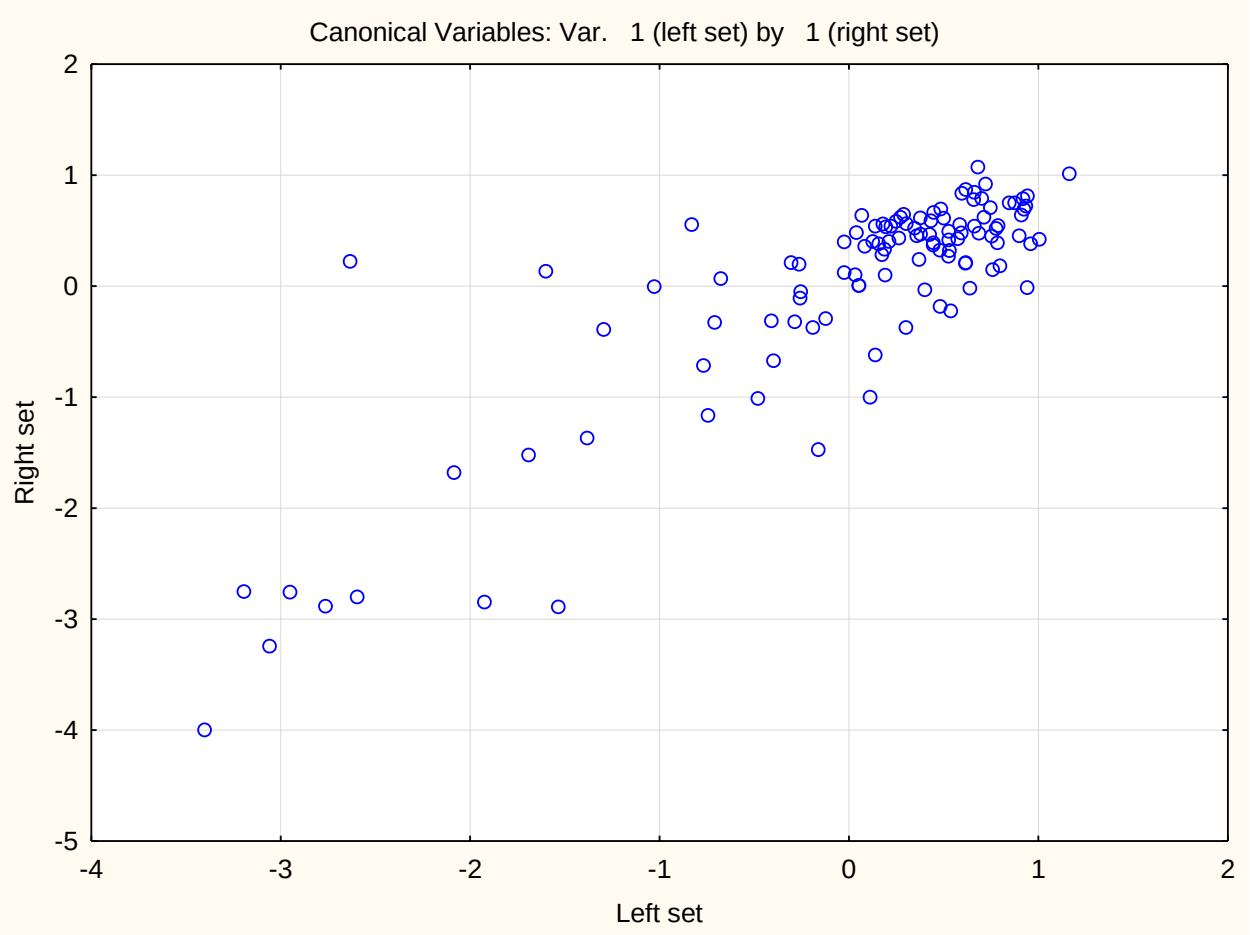


Figure 8: Canonical variance between two sets of variables

Thus the value of this canonical correlation is high at R = 0.86, and is interpreted as the simple correlation between the weighted sum of the scales of CGS and EO.

Secondly, the canonical R-square value of R^2 = 0.732 shows that almost three-quarters of the variance in the two sets of variables has been accounted for by the first canonical root. This is considered substantial as the summary measure has accounted for most of the variance in the two sets. Moreover, the variance extracted by all the canonical roots is high for each set of variables (89.73% and 100% for CGS and EO respectively).

The factor structures of the first linear combination of the summarised CGS variable is presented in Table 5, and shows that knowledge, followed by commitment, are the most strongly represented dimensions in the composite measure. The factor structure of the first linear combination of EO shows that innovation, proactiveness, and risk-taking contribute similarly and strongly to the composite measure of EO.

Table 9: Factor structure of the first root of CGS and EO

	Root 1		Root 1
Knowledge	0.976534	**Proactiveness**	0.973359
Commitment	0.945164	**Innovation**	0.963181
Involvement	0.758205	**Risk taking**	0.892665
Board effectiveness	0.738787		

The redundancy indices of 54.78% and 65.61% for CGS and EO respectively shows that approximately 55% of the variance in the set of CGS variables and almost two-thirds of the variance in the set of EO variables can be accounted for by the canonical roots.

In summary therefore, the multivariate canonical root analysis is regarded as having produced an adequate summary of the two sets of measures. The results show that the internal consistency reliabilities of the instruments used in this study were generally acceptable to high. Lack of normality of the scale score distributions, even following attempts at transformations, although undesirable, did not prevent further parametric analysis as canonical root analysis does not assume normality. The correlations at univariate and multivariate levels were positive and significant in line with the hypotheses of the research.

Finally, the multivariate technique of factor analysis was used to reduce the dimensionality of the four scale scores of CGS to their common underlying dimension(s) or factor(s), and similarly to reduce the dimensionality of the three scale scores of EO to their underlying common factor(s). The factor scores i.e., the weighted combinations of the respective scale scores for CGS and EO, were subsequently correlated, and the corresponding scatter plot is shown in Figure 9. This figure also provides descriptive statistics and distributions of the factor score.

The correlation of r = 0.84 between the CGS factor score and the EO factor score is almost the same as the canonical R of 0.86. Thus the technique of factor analysis has validated the result of the canonical correlation by showing a correlation of almost identical strength between the factor scores of CGS and EO.

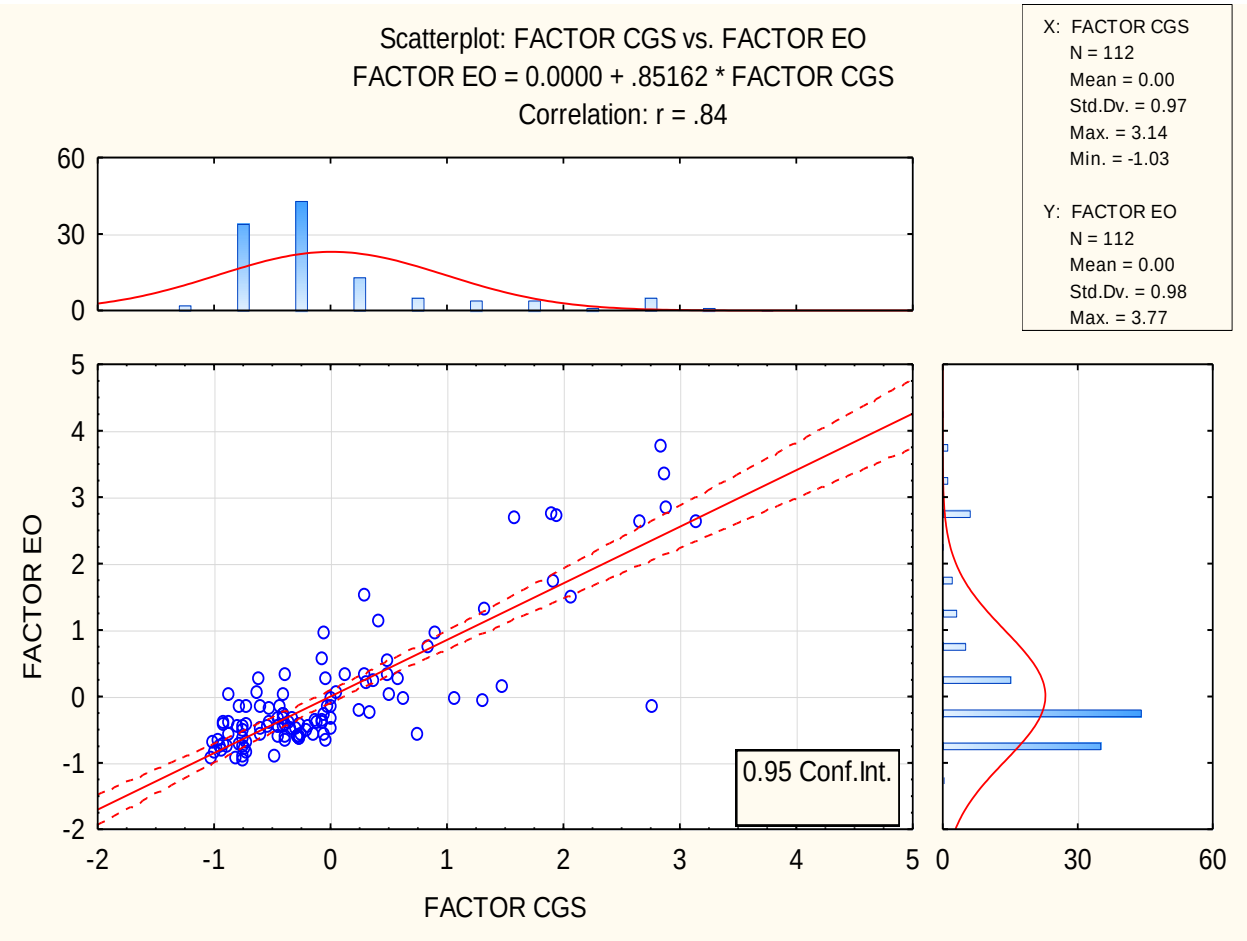


Figure 9: Correlation between the CGS and EO factor scores

5 DISCUSSION OF RESULTS

5.1 Introduction

This section provides a detailed discussion of the results presented in the previous chapter. Various statistical analyses were conducted to assess the psychometric properties of the instruments. In this section, discussion of the findings with respect to descriptive statistics of the measurement instruments is followed by an overview of the demographic variables. The discussion on the relationships between the variables is presented in the last part of this section.

5.2 Reliability of the measurement instruments

As revealed in Table 6, the values of the central location of all the scales are at least 5. These means are high, as the scale or midpoint of a seven-point Likert-type scale is four. Thus the responses to these scales are generally positive or very positive. Internal consistency reliabilities of all scales as measured by Cronbach's Alpha coefficient and the average inter-item correlations are found to be satisfactory or high (Hair *et al.,* (2006).

5.3 Respondents demographic variables

After careful selection criteria as mentioned in Chapter 3, a total of 425 questionnaires were sent out targeting boards, executives, CEOs and decision-makers in companies in the South African oil and gas industry. For each respondent, the variables measured were gender, race, and position in the company, and for each company, the variables measured were type of enterprise, years in business, principle line of business, number of employees, board size and board composition. The finding shows a demographic mix between the various profiles, with examples of gender difference where males outnumbered females in the upper-echelon.

In the next part, a detailed discussion on the results of the relationships within and between each of the dimensions CGS and EO follows.

5.4 Correlations within and between the dimensions of CGS and EO

Statistical analysis of the sample of 173 decision-makers in the South African oil and gas industry provided ample support for the relationships between EO and CGS. In the same way, the univariate correlations between the dimensions of CGS and EO, and the multivariate correlations between CGS and EO vary, showing positive linear relations at both univariate and multivariate levels.

The highly positive multivariate correlation between CGS and EO (R = 0.86), derived through Canonical correlation, was validated by a second multivariate technique, that of common factor analysis. The latter technique yielded a correlation of almost identical strength (r = 0.84) between the CGS and EO factor scores. Thus for both multivariate methods, the results show a high positive correlation between the underlying latent roots, dimensions or factors of CGS and EO.

The bivariate correlation results, shown in the scatter plot, (Figure 7) imply that all scales in the various dimensions of CGS are positively and significantly correlated with each other similarly, in the scales for EO dimensions. This finding helps to address the research question, with a clear construct validity of the instrument used, and allow for support of the univariate and multivariate levels in both CGS and EO.

5.4.1 Correlation between board effectiveness, and innovation, proactiveness and risk-taking

Boards and executives play a pivotal role in developing and monitoring an organisation's capacity and ability to be entrepreneurially oriented. The strength of the correlation between CGS and EO found during the analysis reveals that board competence and agility positively relates to an organisations' propensity to innovative via product and service development ahead its competitors. In this view,

our finding is consistent with prior studies drawn from the expanded literature that established a significant positive relationship between board effectiveness through management, control and monitoring of strategic processes, resources and imaginative ideas to take advantage of future opportunities (Dover and Dierk 2010). In this process, the empirical data provides clear evidence of support of the propositions and hypotheses of this study.

Furthermore, significant inter-correlations between the measurement instruments shows a strong relationship consistent with the research of Windsor (2009), who found that one of the definitive characteristics of effective and competent boards is their ability to respond to governance and responsibility pressure with dignity, ethics, individually embedded integrity and drive for achievement. Thus, board effectiveness and competence correlates with knowledge and expertise. These attributes in turn invigorate board's commitment to management complexities in the face of challenges and strategic decision-making processes. The findings in this study have established how internal governance through board effectiveness can shape management support for new products and service development.

Increasing regulatory pressures and global competitiveness, industrial and financial scandals require that board and executives should be effective and competent to understand the environment in which they operate. Maly and Anderson (2008), found a significant positive increase in board effectiveness and involvement in strategy development, operation planning that enhances an interactive environment between management and executives and promotes further support for management preferences in innovation and an appetite for risky-venturing and management.

5.4.2 Correlation between board knowledge and innovation, proactiveness and risk-taking

The theoretical literature suggests that boards, executives and decision-makers in general, bring different kinds of capabilities to create and develop initiatives that will make their organisations entrepreneurially oriented. The oil and gas industry is known to be an industry constantly faced with the challenges of technological advancement, capacity expansion, innovation in alternate products, and with high

degree of market, environmental, regulatory and risky venturing. This current study proposes that industrial specific knowledge and experience correlates with organisations' innovative, proactive and risk-taking ability.

Consequently, the result shows that board knowledge and experience have the strongest correlation within and between the univariate and multivariate levels of CGS and EO domains and dimensions. This data suggests a significant positive correlation among all aspects of board effectiveness and competence, commitment and involvement in decision-making processes and controls; with entrepreneurial risk-taking, innovation and the propensity to act ahead of rivals to gain competitive advantage in product development and capacity expansion for greater market share.

This finding is consistent with that of Pollio and Uchida (1999), who established that most managers in the British oil companies have had prior knowledge and experience within the integrated sector and that most of the executive and top management positions are occupied by qualified professionals who can take meaningful decisions on both internal and external venturing to create value for their organisation. Similarly, Kor (2003) found that past industry-specific experience relates to the overall competence of the top management team's knowledge of the opportunities, threats, competitions and industry specific technology useful in creating entrepreneurial growth.

Furthermore, Wu (2008) found that industry-specific knowledge and experience of board and executives relates positively to innovation performance in new product and service development. Williams and Lee (2009) found a significant relationship between boards and executives' internal knowledge and support for innovation and risky venturing via R&D, taking advantage of industry pioneering through knowledge and experience, and their relationship with opportunity recognition, evaluation and exploitation.

5.4.3 Correlation between board commitment, and innovation, proactiveness and risk-taking

Several studies provided empirical evidence that corporate decision making processes require commitment. Cutting and Kouzmin (2002) recorded that commitment of time and cognitive energy is required by boards and executives for effective monitoring and controlling of the management and operations of an organisation. The results of this study found that board and executives' commitment and intuition to recognise and manage complexities, to be strongly correlated with the dimensions of EO.

The commitment of the board and executives relates positively to innovation as found by Wu (2008). Board commitment to experimentation, when faced with complex decisions on uncertainty posited in the external environment and changing technologies trends (Hughes and Morgan 2007) in the industry, relates to their knowledge and experience on market trends, regulatory impediments and product launching in new markets. Thus, previous research has pointed towards a number of significant relationships between board commitment and risk-taking. For example, Lumpkin and Dess (2005) found a correlation between the process of venturing forward for growth and sustainability, and a boards' financial commitment; Perez-Luno, *et al.,* (2010) findings show that the amount of innovation and the extent to which organisations favour innovation generation over adaptation, relates to the board and executives' commitment to management's complex risk and the board and executives' commitment towards risky venturing. The effectiveness of boards relates, to a large extent, to the degree of commitment of active members in monitoring and implementing organisational control strategies towards achieving their goals.

5.4.4 Correlation between board involvement in decision-making and innovation, proactiveness and risk-taking

The research results were used to test the strength of the relations between the univariate scales of board involvement in decision-making processes and EO dimensions.

The research results suggest that boards and executives' involvement in decision-making processes and controls is reflected by scores on the dimensions of CGS and

EO respectively. The generally positive and highly positive responses of the respondents, and the positive correlations between the construct dimensions, suggest that boards and executives involvement in the decision-making processes and controls are associated with commitment, effectiveness, experience and competence in monitoring strategic decisions. This in turn contributes to management and decision makers being more attuned to entrepreneurial activities.

Although, some other studies find that board size and composition may deter the relation between these scales, for example Gabrielsson (2007) and Ogbechie (2009) found that both board size and composition are negatively correlated with board's and executives' involvement in the decision-making processes., This study however, is focused on assessing the relationships between the dimensions of the constructs of CGS and EO at both univariate and multivariate levels, while board size and composition, and board perception of the dynamisms of the environment in which they operate, are used as demographic measures. It is however, suggested that further research should examine possible moderating effects of board size, composition and perceptions on the relations between CGS and EO.

The internal and external pressures, as well as increasing aggressive competition in a transition and emerging economy such as South Africa, require that the board and executives should be more directly involved in decision-making processes, monitoring and controls rather than the traditional rectifying and implementing management-generated short and long-term strategies for the organisation. In South Africa, the updated King III (2009) outlined guidelines on board and executive roles and responsibilities in shaping their organisations forward entrepreneurially for sustainability. This statement supports the echoed work of Ibrahim *et al.,* (2007) in their report on the extent of board involvement in decision-making processes. These authors, Ibrahim *et al.,* (2007), also developed the scale for measuring board involvement and found a significant positive relationship between boards' involvement in decision-making processes and boards' commitment, competence, experience, and industry-specific knowledge in understanding an organisation' strategy, operations, financial needs, risks, and regulatory requirements, when taking advantage of opportunities within the industry and internalisation.

5.4.5 Relationship between EO composite measures and CGS composite measures

In this study, my primary aim is to determine the extent and strength of the relationship between EO and CGS in the South African oil and gas industry. Several inferences and empirical evidence in literature, (Miller and Toulouse 1986; Voss *et al.,* 2005; Drew *et al.,* 2006; Chang *et al.,* 2007; Green *et al.,* 2008; Wu 2008; Casillas *et al.,* 2010; Perez *et al.,* 2010), showed that there was indeed a positive significant relationship between these constructs, or differently stated, found that good CGS have a significant positive relationship with EO.

Despite the expanded literature on the relationships between these two constructs, there are limited references to studies on these relationships in South Africa in general, and the oil and gas industry in particular. By drawing extensively from King III (2009), and further existing theory on EO, and combining this with the study data, this study found that good CGS have a significant positive relationship with EO. This consistently supports the results and findings of prior practitioners, business and scholarly research. In the analysis, it was found that this relationship was driven by boards' and executives' knowledge, experience, commitment, and recognition of industry-specific complexities of CGS dimensions and the proactive and innovative dimensions of EO.

6 CONCLUSION

6.1 Introduction

The objective of this chapter is to present the overall conclusions on the synthesis gleaned from this study based on the literature review presented in chapter two and the findings in chapter four as interpreted in chapter five. In this view therefore, the section first presents the constructs of EO and CGS, followed by the implication of the research study to management, policy makers and corporate entrepreneurs in particular. What follows, are the study limitations observed during the process of the research and thereafter, the study will conclude with plausible recommendations identified in the course of this investigation.

6.2 EO and CGS

This study proposes the links between EO and CGS in the South African oil and gas industry. Although prior studies have provided empirical evidence on the EO and CGS relationships in general, there are no empirical references to any studies in the South African oil and gas industry on these important relationships.

South Africa as a transitional and emerging economy is still going through transformation in both the political and socioeconomic arenas in the same way that conglomerates and multinational organisations are diffusing the locus of control enjoyed before 1994. The oil and gas industry, being one of the major industries driving the economy, is still undergoing transformation and is faced with technological, skill, environmental, minority ownership, and regulatory challenges.

Oil and gas is an industry where organisations often have to make capacity expansions, innovate due to rapid technology change, constantly engage in research and technology to take industry advantage of pioneering alternate products to meet the future demand as a result of environmental concerns, and operate within risky and strictly regulated guidelines. Having identified all attributes of EO, this study

seeks to find the strength of the relationship between EO and CGS in the highly regulated and capitalised oil and gas industry.

Motivated by a deep curiosity to identify these relationships therefore, it was proposed that firstly, each of the dimensions of CGS is positively correlated with each of the dimensions of EO; and secondly, that the composite measure of CGS is positively correlated with the composite measure of EO.

An expansive literature review on EO and corporate governance was carefully investigated. Focusing on the research aim, an interpreted conceptualisation of EO and CGS was operationalized with the three main attributes of EO, namely, innovation, proactiveness and risk-taking propensity; and the four dimensions of CGS namely, board effectiveness, board knowledge, board commitment, and board involvement in decision-making processes.

The study is quantitative research and uses descriptive and inferential statistics with primary data sources based on the initial identification of the problem that this research study intends to address. The statistical analyses were based on STATISTICA (Version 10) and preceded from an investigation of the distribution of the scales and their psychometric properties, to testing the hypotheses of the research on the scale scores. In summary, statistical analyses found significant relationships between EO and corporate governance systems in the South African oil and gas industry at the one dimensional and multidimensional levels of the analysis.

6.3 Study implications

This study has provided guidance to boards, executives and senior decision-makers firstly, on how their effectiveness and competence in the controls and monitoring of implementation of entrepreneurial strategy will shape the organisation in which those entrepreneurial activities take place. Secondly, boards and senior decision-makers are faced with challenges as outlined in the King III reports for governance code (2009). They must consistently meet the demands of regulators and investors for governance reforms on one side, and be determined to cope with consistent

challenges and changes in the business environment on the other side. Consequently, adopting such measures implies that the role of boards, executives and senior decision-makers should be conceptualised within the framework, set by King III (IOD 2009) with an 'apply-or-explain' rule.

Furthermore, most organisations are faced with aggressive competition and their success is a function of good corporate governance systems and EO thus, their ability to manage complexities and develop an appetite for risky venturing within their competitive arena.

For policy makers, it is important to continuously encourage boards and executives to adhere to the regulatory guidelines, set out in the legislator and amended by King III that shapes the EO within the organisation. Based on this, policy makers should not overlook the responsibilities of boards and executives in promoting an organisations' effectiveness. This study, through several inferences, has established how board effectiveness, knowledge, commitment and involvement in strategic decision-making relate to an EO culture, and the extent to which this is integrated within the vision, mission and norms of an organisation.

In summary, the challenges of managing transitional economies will bring about new ideas and theories, thus, the study offers new insight into the domain of CGS and the characteristics embedded in the organisations' ability to be entrepreneurially oriented. Therefore, this study provides support for the relationship between EO and CGS, however it is unavoidably critical thus enable board executives and decision-makers to learn the theory and practice of entrepreneurship which enables them to think and act entrepreneurially.

In view of this, the present study makes two important contributions. Firstly, it provides an extended knowledge of the three main attributes of EO with regard to its applicability in one distinct industrial context. Secondly, it sheds light on the links between corporate governance mechanisms and an organisations' EO, thereby advancing our knowledge of corporate entrepreneurship in this capitalized and highly regulated type of industry.

6.4 Research limitations

This study in focusing on a particular industry at board, executive and decision-making levels has some underlying limitations. First, the respondent sample was fairly small, and drawn from only one industry. A higher order sample of respondents from a cross-sector of industries in South Africa would have increased the possibility of increased generalisation of findings.

The second limitation is the target population namely, boards, executives and senior decision-makers. The commitment of boards, executives and decision-makers could have contributed to response rate compared to expectation.

Finally, the survey data is an online self-administered questionnaire and has the weakness of respondents' bias towards completing online surveys within the context of the target population.

This study is based on a single industry and is country specific with a small sample. Thus; caution should be applied in generalising the result.

6.4 Recommendations for further research

This study is focused on assessing the relationships between the dimensions of the constructs of CGS and EO at both univariate and multivariate levels. It is however suggested that further research should examine possible moderating effects of board size, composition and perceptions on the relations between CGS and EO.

Moreover, since this current study is based on a single industry and is country specific with a small sample size, further research may be strengthened by using a sample comprising of a cross-section of industries in South Africa. It is recommended therefore, that future research should collect longitudinal data based on the nature of the population targeted to allow for validation of the result of this research.

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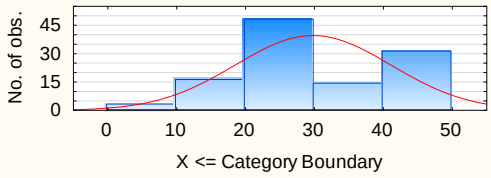
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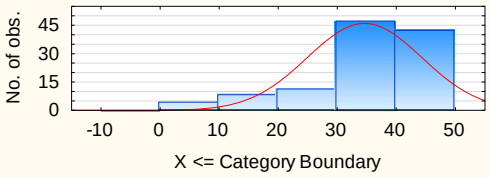
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APPENDIX 1: TRANSFORMATIONS OF CGS SCALES AND TESTS OF NORMALITY

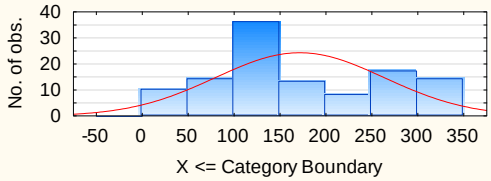
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K-S d=.12403, p<.10 ; Lilliefors p<.01
Shapiro-Wilk W=.95202, p=.00051



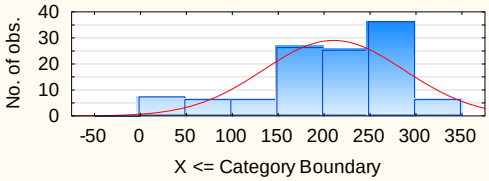
Histogram: Commitment sq: =v52^2
K-S d=.14790, p<.05 ; Lilliefors p<.01
Shapiro-Wilk W=.88348, p=.00000



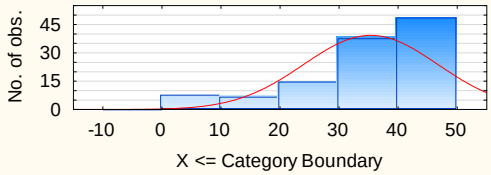
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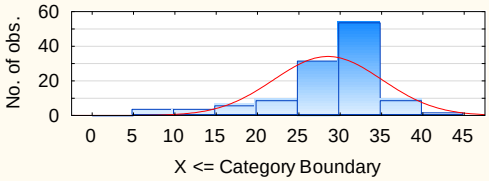
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Shapiro-Wilk W=.93388, p=.00003



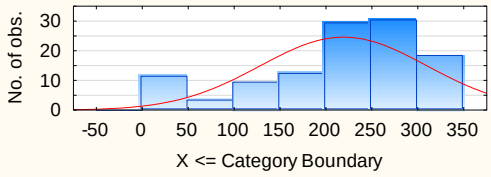
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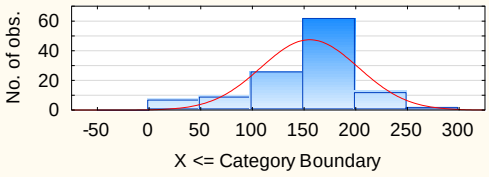
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K-S d=.17131, p<.01 ; Lilliefors p<.01
Shapiro-Wilk W=.85006, p=.00000



Histogram: Knowledge cu: =v38^3
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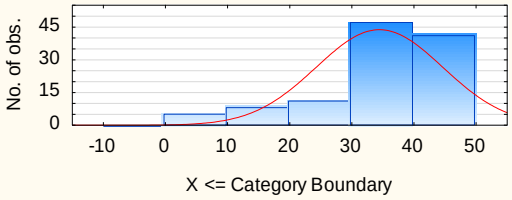


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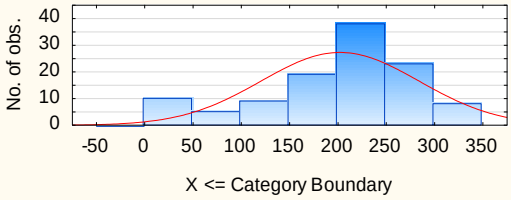


APPENDIX 2: TRANSFORMATIONS OF EO SCALES AND TESTS OF NORMALITY

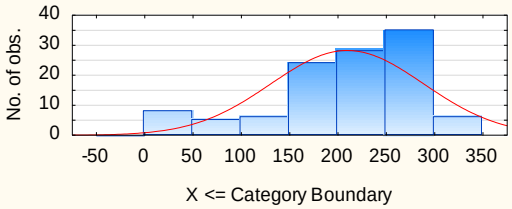
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K-S d=.15115, p<.05 ; Lilliefors p<.01
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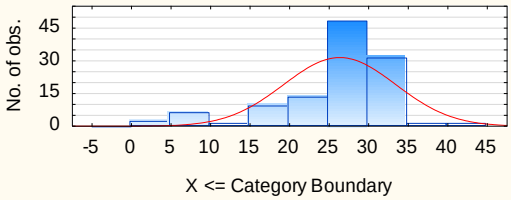
Histogram: Proactiveness cu: =v93^3
K-S d=.13190, p<.05 ; Lilliefors p<.01
Shapiro-Wilk W=.92664, p=.00001



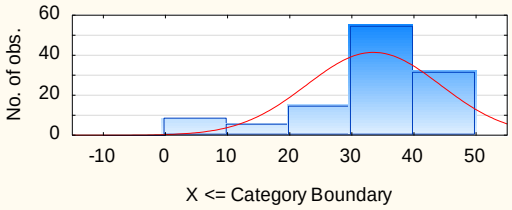
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K-S d=.12177, p<.10 ; Lilliefors p<.01
Shapiro-Wilk W=.92391, p=.00001



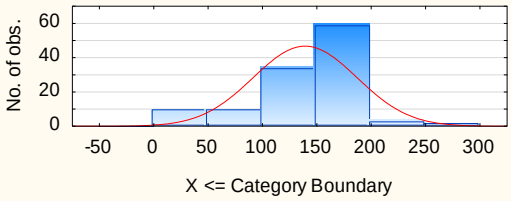
Histogram: Risk taking sq: =v105^2
K-S d=.21134, p<.01 ; Lilliefors p<.01
Shapiro-Wilk W=.82407, p=.00000



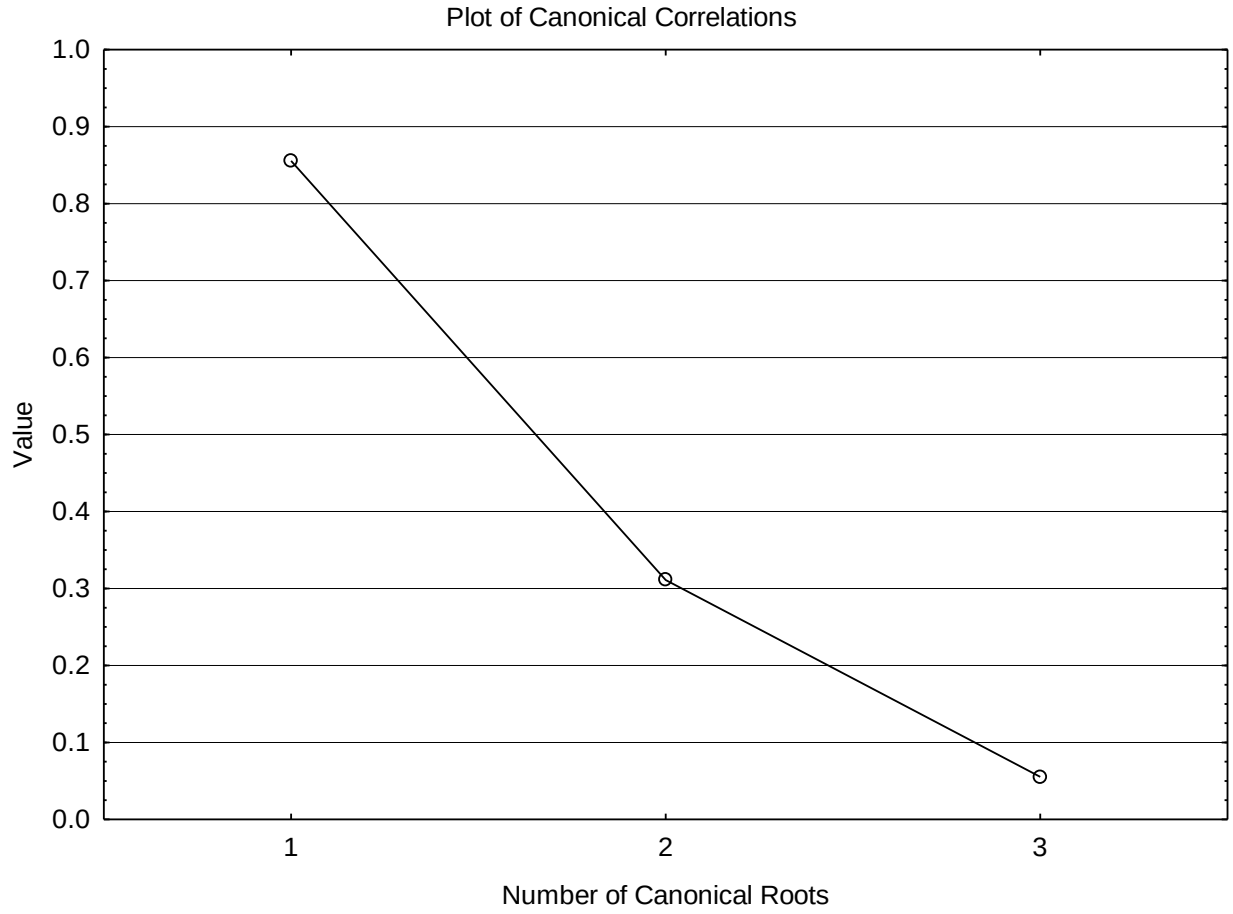
Histogram: Proactiveness sq: =v93^2
K-S d=.16495, p<.01 ; Lilliefors p<.01
Shapiro-Wilk W=.86529, p=.00000



Histogram: Risk taking cu: =v105^3
K-S d=.17589, p<.01 ; Lilliefors p<.01
Shapiro-Wilk W=.88524, p=.00000



APPENDIX 3: PLOT OF CANONICAL CORRELATIONS.



APPENDIX 4: SURVEY INSTRUMENTS.

Part 1: Biographical Information

Name: _____

Company: _____

Please indicate your response with an X in the appropriate box

Gender:	Male	Female

Race:	Asian	Black	Coloured	White

- **What kind of enterprise is your firm?**

State owned	Public owned listed	Public owned, non-listed	Private owned, listed	Private owned, non-listed

- **Years in Business**

0-5	6-10	11-15	16-20	21-25	26-30	31-35	36-40	41-45	46-50	above 50

- **What is your principal line of business?**

Refining	Construction	Logistics	Trading	Marketing	Engineering/ITC

- **What is your position in your company?**

CEO	Board Member	Outside Director	Company Secretary	Top Manager	Middle Manager

- **Number of Employees**

0-30	31-99	100-499	500-1000	Over 1000

- **Board Size**

0-5	6-10	11-15	16-20	Over 20

- **Number of outside Directors (Non-executive directors/Board members)**

0-5	6-10	11-15	61-20	Over 20

Part 2: Corporate Governance Measurement Scales and items

Board effectiveness on competence that shapes firm's strategic entrepreneurial direction

1. For each statement below, please indicate your strength of agreement...

1. The board sets clear organisational priority on entrepreneurial activities for the year ahead.

Strongly Disagree							Strongly Agree
	1	2	3	4	5	6	7

2. The governing board of my firm delays actions until issues become urgent and critical.

Strongly Disagree							Strongly Agree
	1	2	3	4	5	6	7

3. Our governing board tends to focus more on current concerns than on preparing for technological changes that would enhance creative ideas and innovation.

Strongly Disagree							Strongly Agree
	1	2	3	4	5	6	7

4. The board of directors often discusses and initiates where the organisation should be headed in three years or more on technological, product-market or administrative innovation.

Strongly Disagree							Strongly Agree
	1	2	3	4	5	6	7

5. Within the past year, the governing board of my firm has reviewed the organisation's strategies for attaining its long-term goals ahead of competitors on capacity expansion.

Strongly Disagree							Strongly Agree
	1	2	3	4	5	6	7

6. The board discusses and initiates events and trends in the larger environment that may present specific entrepreneurial opportunities for my firm.

Strongly Disagree	1	2	3	4	5	6	7	Strongly Agree

7. The governing board converts unsuccessful novel ideas into more creative and innovative ones.

Strongly Disagree	1	2	3	4	5	6	7	Strongly Agree

8. When faced with an important issue, the board often arrives at a solution by generating several creative and tested approaches through R&D.

Strongly Disagree	1	2	3	4	5	6	7	Strongly Agree

9. The board influences the involvement, of employees at all levels in entrepreneurial activities within my firm.

Strongly Disagree	1	2	3	4	5	6	7	Strongly Agree

- **<u>Professional Knowledge and Experiences.</u>**

2. The Governing Board members of my firm...

1. Have enough experience to detect problems on directors' involvement in the process of fostering entrepreneurial orientation within the organisation.

Strongly Disagree	1	2	3	4	5	6	7	Strongly Agree

2. Have enough training to detect problems on directors' involvement in the process of fostering entrepreneurial orientation within the organisation.

Strongly Disagree	1	2	3	4	5	6	7	Strongly Agree

3. Have expertise sufficient to allow the board to add value to the decision making process.

Strongly Disagree	1	2	3	4	5	6	7	Strongly Agree

4. Are fully aware of the competitive position of my firm.

Strongly Disagree	1	2	3	4	5	6	7	Strongly Agree

5. Are well versed in the organisational and strategic issues of my firm.

Strongly Disagree	1	2	3	4	5	6	7	Strongly Agree

6. Are well experienced in the industry environment in which we operate.

Strongly Disagree	1	2	3	4	5	6	7	Strongly Agree

7. Have a retreat or special session at least every two years to examine performance on long-term entrepreneurial goals.

Strongly Disagree	1	2	3	4	5	6	7	Strongly Agree

8. Initiate directors' involvement in skill transformation and training on individual employees' entrepreneurial capabilities across different segments of my firm.

Strongly Disagree	1	2	3	4	5	6	7	Strongly Agree

9. Periodically set aside time to learn more about issues facing directors and managers in process of risk-taking, development of new initiatives and implementation of changes that will enhance entrepreneurial activities within the firm.

Strongly Disagree	1	2	3	4	5	6	7	Strongly Agree

- **<u>Board Commitment and Recognition of Complexities</u>**

3. The Governing Board members of my firm....

1. Take regular steps to keep informed of important trends in the industry that might affect the organisations' technological and innovative initiatives.

Strongly Disagree	1	2	3	4	5	6	7	Strongly Agree

2. Explicitly examine the risks of any important decision it is about to make.

Strongly Disagree	1	2	3	4	5	6	7	Strongly Agree

3. Seek information related to innovation and technological advancement from leaders of other similar organisation outside their operating environment.

Strongly Disagree	1	2	3	4	5	6	7	Strongly Agree

4. Attend meetings regularly.

Strongly Disagree	1	2	3	4	5	6	7	Strongly Agree

5. Are always well prepared when they attend meetings.

Strongly Disagree	1	2	3	4	5	6	7	Strongly Agree

6. Have reasonable information before being asked to ratify major unsuccessful and failed entrepreneurial initiatives.

Strongly Disagree	1	2	3	4	5	6	7	Strongly Agree

7. Always conduct substantive and thorough discussions of key issues during board meetings.

Strongly Disagree	1	2	3	4	5	6	7	Strongly Agree

8. Usually debate strategic decisions openly and constructively during meetings.

Strongly Disagree	1	2	3	4	5	6	7	Strongly Agree

9. Actively provide insight, advice and support on key decisions.

Strongly Disagree	1	2	3	4	5	6	7	Strongly Agree

10. Are always attuned to the concerns of a variety of stakeholders.

Strongly Disagree	1	2	3	4	5	6	7	Strongly Agree

11. Commit themselves sufficiently to foster effective decisions and reverse failed initiatives and policies.

Strongly	1	2	3	4	5	6	7	Strongly

Disagree								Agree

- **Board involvement in decision control**

4. *Board involvement in decision controls are defined for the purpose of this study, as non-routine, resource allocation, and strategic decisions that should affect the long-term entrepreneurial orientation and performance of the firm. Based on that introductory definition, please indicate your strength of agreement on your firms' board general level of involvement in entrepreneurial decision making.*

1. The board is usually involved in formation and determining the firm's vision and mission that guide entrepreneurial strategic decisions.

Strongly Disagree	1	2	3	4	5	6	7	Strongly Agree

2. The board is usually involved in determining, reviewing and ratifying entrepreneurial strategic proposals that are initiated by top management.

Strongly Disagree	1	2	3	4	5	6	7	Strongly Agree

3. The board is usually involved in determining and enforcing changes in firm's policies.

Strongly Disagree	1	2	3	4	5	6	7	Strongly Agree

4. The board is usually involved in reviewing and evaluating entrepreneurial opportunities, threats and risks that the firm is exposed to.

Strongly Disagree	1	2	3	4	5	6	7	Strongly Agree

5. The board is usually involved with strategic innovative decisions with top management.

Strongly Disagree	1	2	3	4	5	6	7	Strongly Agree

6. The board is usually involved in determining business unit venturing, strategies and plans.

Strongly Disagree	1	2	3	4	5	6	7	Strongly Agree

7. The board is usually involved in ensuring appropriate organisation structure and entrepreneurial capabilities.

Strongly Disagree	1	2	3	4	5	6	7	Strongly Agree

8. The board usually accepts the evaluation given to it by top management without asking any probing question.

Strongly Disagree	1	2	3	4	5	6	7	Strongly Agree

9. The board is usually involved with monitoring the progress of strategic decisions.

Strongly Disagree	1	2	3	4	5	6	7	Strongly Agree

10. The board is usually involved in determining the firm's ability to sustain long-term growth and investor value under well-defined objectives and Best Practices.

Strongly Disagree	1	2	3	4	5	6	7	Strongly Agree

11. The board is usually involved in strategic decisions with top management in investing heavily in cutting edge process technology-oriented R&D.

Strongly Disagree	1	2	3	4	5	6	7	Strongly Agree

12. The board is usually involved with top management in determining development systems that encourage initiatives and creativity among employees.

Strongly Disagree	1	2	3	4	5	6	7	Strongly Agree

13. The success of my firm on issues relating to innovation, creative initiatives and pioneering new ideas is in the hands of key decision makers who were in my firm three years ago.

Strongly Disagree	1	2	3	4	5	6	7	Strongly Agree

14. The success of my firm on issues relating to innovation, creative initiatives and pioneering new ideas is in the hands of key decision makers in my firm today.

Strongly Disagree	1	2	3	4	5	6	7	Strongly Agree

Part 3: EO: Measurement scales and items for Entrepreneurial Orientation

The following statements are meant to identify the collective management style and involvement on your firm's key decision-makers on entrepreneurial orientation. For each statement below, please indicate your strength of agreement.

- **<u>Proactiveness</u>**

1. In general, the Governing Board and Top Management of my firm favours....

1. Adopting creative methods of running business ahead of competitors.

Strongly Disagree	1	2	3	4	5	6	7	Strongly Agree

2. Introducing new products or technological capabilities ahead of competitors.

Strongly Disagree	1	2	3	4	5	6	7	Strongly Agree

3. Expanding capacity ahead of competitors.

Strongly Disagree	1	2	3	4	5	6	7	Strongly Agree

4. Clashing with competitors and adopting a very competitive, 'undo-the-competitors' posture.

Strongly Disagree	1	2	3	4	5	6	7	Strongly Agree

5. Continuously seeking opportunities (such as new market, new customers) related to the operations and technologies.

Strongly Disagree	1	2	3	4	5	6	7	Strongly Agree

6. Sponsorship of novel ideas by bearing the cost associated with unforeseen technological problems and failure in (new markets/customers resistance).

Strongly Disagree	1	2	3	4	5	6	7	Strongly Agree

7. Striving to be a 'first mover' to capture the benefits of industrial pioneering

Strongly Disagree	1	2	3	4	5	6	7	Strongly Agree

8. Sharing knowledge and information on the downside of a ‘first mover’, such as customer’s resistance to novel ideas.

Strongly Disagree	1	2	3	4	5	6	7	Strongly Agree

9. Close monitoring of technological trends and identifying future needs.

Strongly Disagree	1	2	3	4	5	6	7	Strongly Agree

- **Innovativeness**

2. In general, the Governing Board and Top Management of my firm favours…

1. A strong intention to encourage and stimulate technological, product-market or administrative innovation.

Strongly Disagree	1	2	3	4	5	6	7	Strongly Agree

2. A strong intention to stimulate creativity and experimentation.

Strongly Disagree	1	2	3	4	5	6	7	Strongly Agree

3. A long-term commitment to invest in new technology, R&D, and continuous improvement.

Strongly Disagree	1	2	3	4	5	6	7	Strongly Agree

4. Innovative initiatives hard for companies to imitate successfully.

Strongly Disagree	1	2	3	4	5	6	7	Strongly Agree

5. Routinely making dramatic innovation in products, services, or Process technologies.

Strongly Disagree	1	2	3	4	5	6	7	Strongly Agree

6. "Safeguard" investment in R&D during difficult economic period.

Strongly Disagree	1	2	3	4	5	6	7	Strongly Agree

7. Introduction of untested technology.

Strongly Disagree	1	2	3	4	5	6	7	Strongly Agree

8. Developing systems that encourage entrepreneurial initiatives and creativity among employees.

Strongly Disagree	1	2	3	4	5	6	7	Strongly Agree

9. Encouraging and **s**upporting an organizational unit that drive innovation through sponsor.

Strongly Disagree	1	2	3	4	5	6	7	Strongly Agree

10. Increasing the revenue from new products less than 3 years old.

Strongly Disagree	1	2	3	4	5	6	7	Strongly Agree

11. Changes in existing product/services have been mostly of a minor nature in the past 3 years.

Strongly Disagree	1	2	3	4	5	6	7	Strongly Agree

- **<u>Risk-Taking</u>**

1. In general, the governing board and directors of my firm supports…

1. Committing a large portion of its resources in order to promote entrepreneurial risk-taking.

Strongly Disagree	1	2	3	4	5	6	7	Strongly Agree

2. Investing in high-risk projects which promise high return.

Strongly Disagree	1	2	3	4	5	6	7	Strongly Agree

3. Proper level of business, financial risk-taking.

Strongly Disagree	1	2	3	4	5	6	7	Strongly Agree

4. Proper level of personal risk-taking.

Strongly Disagree	1	2	3	4	5	6	7	Strongly Agree

5. Exploring the environment gradually via timid, incremental behaviour.

Strongly Disagree	1	2	3	4	5	6	7	Strongly Agree

6. Bold, wide-ranging acts necessary to achieve the firm's entrepreneurial objective.

Strongly Disagree	1	2	3	4	5	6	7	Strongly Agree

7. Adopting cautious 'wait-and-see' posture when confronted with decision making situation involving entrepreneurial venturing uncertainty to minimize the probability of making costly decisions.

Strongly Disagree	1	2	3	4	5	6	7	Strongly Agree

8. Adapting of a bold, aggressive posture in order to maximize the probability of exploiting potential entrepreneurial opportunities.

Strongly Disagree	1	2	3	4	5	6	7	Strongly Agree

9. Enhancing its competitive risk position by applying techniques and processes that have worked in other domains.

Strongly Disagree	1	2	3	4	5	6	7	Strongly Agree

- **Board Perception of Environmental Dynamism**

For each statement below, please indicate your strength of agreement on the board's perception of the environmental dynamism in your industry...

1. Speed of technological change is high.

Strongly Disagree	1	2	3	4	5	6	7	Strongly Agree

2. Firms change their products quickly.

Strongly Disagree	1	2	3	4	5	6	7	Strongly Agree

3. R&D spending has increased overtime.

Strongly Disagree	1	2	3	4	5	6	7	Strongly Agree

Rate of product innovation is increasingly high.

Strongly Disagree	1	2	3	4	5	6	7	Strongly Agree

Rate of innovation in production technology is high.

Strongly Disagree	1	2	3	4	5	6	7	Strongly Agree